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The constitutional implications of digital learning technologies in public education: Balancing the right to education, equality, and access in the digital Era

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ABSTRACT

The swift incorporation of digital learning technology into public education systems has significantly transformed the delivery and administration of education, especially following the COVID-19 pandemic. Although digital and mixed learning approaches offer considerable prospects for innovation, flexibility, and increased accessibility, they also reveal and perhaps exacerbate entrenched socio-economic disparities. This article analyses the constitutional ramifications of digital learning technologies in South Africa's public education system, concentrating on the right to education, equality, and access in the digital age. The study used a qualitative, desktop-based socio-legal methodology to examine constitutional provisions, educational law, policy frameworks, and pertinent jurisprudence to evaluate the state's responsibilities in regulating technology-driven education. The paper contends that digital education is not a neutral or just technical advancement, but rather a constitutional reform that directly impacts the achievement of fundamental rights. It illustrates that disparate access to digital infrastructure, devices, connectivity, and digital literacy represents indirect discrimination and compromises substantive equality. The increasing participation of private EdTech entities raises significant questions about accountability, data privacy, and public scrutiny. The article asserts that constitutionally compliant digital education requires intentional regulation, equity-focused investment, and the acknowledgement of digital literacy as essential for the effective realisation of the right to education, cautioning that unregulated digitalisation can exacerbate, rather than mitigate, educational inequality.

Keywords: Right to Education, Digital Learning Technologies, Equality and Access, Constitutional Governance.

INTRODUCTION

The swift proliferation of digital learning technology in public education systems has revolutionised the global delivery of educational information. The COVID-19 pandemic has expedited the adoption of online and blended learning approaches as educational institutions shifted to remote instruction to

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comply with health regulations. This transition has led to an increasing dependence on educational technology (EdTech) platforms to facilitate fundamental educational operations, signifying that digital learning technologies have become an enduring structural element of public education.[1] Despite these developments, substantial disparities in access to digital learning resources, including devices, internet connectivity, and infrastructure, persist. These disparities increase the likelihood of marginalising vulnerable learners from obtaining significant educational opportunities, thereby raising serious concerns about adherence to constitutional rights pertaining to education and equality.[2] The escalating conflict between technological advancement and constitutional protections requires a reassessment of governmental responsibilities to regulate and guarantee fair access to digital education. The increasing involvement of private EdTech entities in public education creates legal and constitutional ambiguities regarding state accountability and the efficacy of regulatory measures in protecting educational rights and equity. As the participation of these private companies increases, it is crucial to evaluate the ramifications of their incorporation on public law and constitutional principles.[3] Therefore, it is essential to match educational innovations with constitutional mandates and assess the ramifications for policymakers, educators, and legal scholarship to provide equitable access to the advantages of digital learning across all populations. This analysis aims to thoroughly examine the constitutional consequences, concentrating on the equilibrium between upholding the right to education, ensuring equality, and improving access to digital learning.

The COVID-19 pandemic necessitated an overnight transition from traditional classroom-based educational paradigms to remote learning frameworks, affecting over 1.5 billion students across the globe.[4] The transition from in-person instruction to remote learning revealed substantial challenges for educators, including the need to modify teaching methodologies, improve digital skills, and accommodate students' diverse levels of preparedness for online education.[5] A significant consequence of the pandemic is the emergence of blended learning, a hybrid of online and in-person instruction, as a preferred method among numerous educational institutions, promoting a more adaptable learning environment that may improve engagement and outcomes.[6]

The dependence on EdTech platforms for educational content distribution has profoundly transformed the conventional framework of public education. Educational technology enables scalable learning opportunities, facilitating access to diverse resources that were previously unavailable or difficult to access in conventional settings.[7] Platforms have facilitated creative pedagogical approaches that engage students through interactive multimedia and accommodate various learning requirements. This increased reliance on technology prompts concerns about privacy, data security, and the commodification of public education, as corporate entities exert increasing control over educational content and delivery systems.[8] As EdTech platforms grow and become essential to educational frameworks, the ramifications for public accountability require thorough scrutiny. The shift to digital learning has shown significant discrepancies in technological access within and between groups. Students from marginalised backgrounds often face substantial obstacles in accessing digital learning

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[1] Mary Wambaria, "Teachers' Experiences on Remote Learning During the Covid-19 Period: A Case in Kenya," *International Journal for Innovation Education and Research* 11, no. 2 (2023).

[2] Innocent Zitha, Georgina Mokganya, and Orifha Sinthumule, "Lecturers' Experiences with Digital Assessments and Continuity of Digital Transformation in the Higher Education," 2023.

[3] I. Gede Bayu Kartika Yasa, "Teachers' and Students' Perception of Animation Video by Animaker in Blended Learning," *International Journal of English Education and Linguistics (IJoEEL)* 5, no. 1 (2023): 109–19.

[4] Wambaria, "Teachers' Experiences on Remote Learning During the Covid-19 Period: A Case in Kenya."

[5] Ghea Suramita Firdaus et al., "Problems Of Online Learning In The Perspective Of English Education Students Ikip Budi Utomo Malang," *IJET (Indonesian Journal of English Teaching)* 11, no. 2 (2022): 154–60.

[6] Jon Spruce, Sarah Moriarty, and Claire Norcross, "The Post-COVID Design Studio: New Tools, New Rules?," *Design Science* 10 (2024): e31.

[7] Jason Jeevaruban and Gemma M Boden, "The Future of Vocational Higher Education: The Blended Learning Approach," *Compass: Journal of Learning and Teaching* 14, no. 2 (2021).

[8] Sri Ariani and Tawali Tawali, "Problems of Online Learning during Covid-19 Pandemic in Speaking for Professional Context Class," *Jo-ELT (Journal of English Language Teaching) Fakultas Pendidikan Bahasa & Seni Prodi Pendidikan Bahasa Inggris IKIP* 8, no. 1 (2021): 32–37.

materials, such as limited internet connectivity, a scarcity of devices, and insufficient digital literacy skills. This inequity results in a systemic risk of exclusion, as those who cannot participate in digital learning are left behind, reinforcing existing educational inequities. The right to education is established in numerous international and constitutional frameworks, and the growing dependence on digital technology in education requires states to address their duty to provide equitable access. The interaction between educational technology and constitutional guarantees prompts critical enquiries regarding how states might meet their responsibilities to deliver accessible, high-quality education for all individuals, irrespective of socio-economic status.[9] The constitutional ramifications of digital learning technologies in public education highlight a critical juncture in adapting educational systems to the digital age. The proliferation of these technologies presents substantial prospects for innovation and improved educational results. Nonetheless, they present issues about equity, governmental accountability, and the safeguarding of constitutional rights. A balanced approach is crucial, integrating technology improvements while firmly adhering to the principles of equality and educational access. Consequently, it is essential for policymakers, educators, and legal academics to critically address these challenges as digital learning technologies become more integrated into public education.

The Right to Education in Constitutional Law

The right to education is progressively acknowledged as a fundamental socio-economic right embedded in numerous constitutional frameworks globally. This acknowledgement positions education as an inherent right rather than a privilege, necessitating accessibility for all persons, irrespective of their socio-economic or cultural backgrounds. In numerous jurisdictions, this right is justiciable, indicating that individuals may pursue legal remedies if their educational rights are infringed or are not adequately addressed by the state.[10] Essential treaties, like the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights, assert the right to education as a means of enhancing individual dignity and advancing socio-economic conditions. These frameworks require states to guarantee availability, accessibility, acceptability, and flexibility in education.[11] Fundamental Elements include:

- **Availability:** This component requires the establishment and maintenance of educational institutions and programs. Educational institutions, including schools, vocational centres, and universities, must have sufficient funding and resources to provide continuous educational delivery.
- **Accessibility:** requires that all persons, especially marginalised and disadvantaged groups, possess physical and economic access to quality education without discrimination. This encompasses both physical infrastructure and technical access, which has gained significance in the digital era.
- **Acceptability:** Educational content must be pertinent, culturally appropriate, and of high quality, ensuring it fulfils the requirements of learners. The curriculum must embody the cultural values and social norms of the society while upholding academic rigour.
- **Adaptability:** Education systems must exhibit flexibility and adaptability to evolving societal demands and individual situations, facilitating a variety of learning pathways and forms, including non-formal and informal education tailored to unique contexts.

The integration of these elements emphasises the significance of a comprehensive approach to educational rights, acknowledging that simple access to physical institutions does not ensure effective education without regard for quality, relevance, and flexibility.

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[9] M. Muktiarni et al., "Readiness for Online Learning during Covid-19 Pandemic in the Vocational Education," *Journal of Engineering Education Transformations* 35, no. 2 (2022): 81–85.

[10] Roderic Crooks, "Toward People's Community Control of Technology: Race, Access, and Education," 2022.

[11] Baichang Zhong, Fenghui Zhu, and Liying Xia, "Is There a Digital Divide between Urban Students and Migrant Students in China?," *Sage Open* 11, no. 2 (2021): 21582440211016388.

Equality and Non-Discrimination Principles

The values of equality and non-discrimination are essential to the right to education, necessitating the thorough resolution of any obstacles that impede equitable access to education. Formal equality denotes the equal treatment of individuals under the law, guaranteeing uniform opportunities devoid of discrimination based on immutable traits such as race, gender, or disability. In the realm of education, this may be reflected in policies that guarantee equitable access for all kids to school enrolment, curriculum participation, and resource availability.[12] However, the concept of formal equality often proves inadequate in the presence of deep social and economic inequalities. Substantive equality extends beyond just equal access by tackling the systemic obstacles that disfavour particular groups. In education, it is essential to recognise that disparities exist in educational outcomes and opportunities for students from varying socio-economic backgrounds, resulting in an unequal allocation of resources, funding, and quality.[13] In the digital age, access to technology is increasingly vital for the fulfilment of educational rights. The notion of the digital divide underscores disparities in access to technology and digital literacy, which can intensify pre-existing inequalities in schooling. Digital exclusion transpires when some populations are unable to access digital educational materials because of socio-economic obstacles, geographical limitations, or insufficient infrastructure. This scenario may manifest as indirect discrimination.[14] Students in marginalised groups may lack access to essential internet connectivity or gadgets needed to participate in digital learning platforms, affecting their ability to engage successfully in educational opportunities. This indirect discrimination against these groups contravenes the principles of substantive equality, as it perpetuates the socio-economic gaps that the right to education aims to eliminate. Hence, policymakers must prioritize addressing the digital divide by implementing measures that ensure equitable access to digital learning technologies and fostering digital literacy among all student demographics.[15]

The concept of education as a justiciable right, coupled with the principles of equality and non-discrimination, particularly in light of digital inclusion or exclusion, shapes the need for comprehensive legal frameworks and policies. These must aim to provide not only equal access to educational opportunities but also to eliminate substantive inequalities that impede access and participation in the digital learning landscape.

METHODOLOGY

This study adopted a qualitative, desktop-based research methodology that relied exclusively on publicly available secondary sources. It conducted a systematic review of South African constitutional provisions, education legislation, policy instruments, and regulatory frameworks that govern public education and the use of digital learning technologies. The analysis was complemented by a review of academic literature on educational technology, equality, and access, as well as relevant Constitutional Court jurisprudence on the right to education and related socio-economic rights. Public law and governance frameworks were applied to examine the state's obligations, regulatory oversight, and accountability in integrating EdTech platforms in public education. Although the absence of primary empirical data limited engagement with lived learner experiences, this approach was appropriate for a socio-legal analysis and enabled a comprehensive examination of the constitutional, normative, and institutional implications of technology-driven public education.

[12] Lina Rahm, "The Ironies of Digital Citizenship: Educational Imaginaries and Digital Losers across Three Decades.," *Digital Culture & Society* 4, no. 2 (2018): 39.
[13] Paula Méndez-Domínguez et al., "Digital Inclusion for Social Inclusion. Case Study on Digital Literacy," *Frontiers in Communication* 8 (2023): 1191995.
[14] Faith Dudu Oritsematosan, Babatunde Alao Olakunle, and O. Alonge Enoch, "Advancing Financial Inclusion through Digital Payment Platforms," *Finance & Accounting* 6, no. 11 (2024): 2028–60.
[15] Nicholas Vanderschantz and Nicola Daly, "The Implications of Typographic Design in Bilingual Picturebooks for Hierarchies," *Journal of Visual Literacy* 42, no. 1 (2023): 48–66.

DISCUSSION

Digital Learning Technologies in Public Education: Definition and Scope

Digital learning technologies include many tools and methods designed to improve educational processes using technology. These technologies include e-learning platforms, Learning Management Systems (LMS), AI-enhanced educational resources, and remote instructional modalities. E-learning systems enable the dissemination of course materials, frequently incorporating multimedia resources, interactive tools, and evaluation functionalities.[16] Learning Management Systems (LMS) are essential for optimising the educational experience by allowing educators to structure course materials, monitor student advancement, and enhance communication. AI-assisted learning has transformed education by personalising content to address individual student requirements, therefore enhancing engagement and retention outcomes.[17] Remote education, hastened by the COVID-19 pandemic, has emerged as an essential element of contemporary public education systems. The transition to online learning settings requires efficient systems that accommodate several learning modalities, guaranteeing educational continuity even during crises.[18] This digital infrastructure not only supports conventional learning but also integrates hybrid models that combine in-person and online education, accommodating various learning styles and requirements.[19]

Technology's role in modern public education is revolutionary, serving as both an enabler and a conduit for improved educational accessibility. Digital learning technology has enabled unparalleled access to high-quality educational resources, particularly for pupils in remote or underserved regions. Technology facilitates the extensive distribution of instructional resources, thus reaching varied people beyond geographical boundaries.[20] The incorporation of technology into public education not only improves conventional teaching methods but also fosters creative instructional strategies that facilitate active and engaged learning.[21] Moreover, the dependence on digital tools in public education systems requires stakeholders to address issues of equity and access. As educational institutions progressively use e-learning platforms and digital curricula, discrepancies in access to essential technologies may intensify existing educational inequalities. This highlights the necessity of formulating policies that promote digital equity, guaranteeing that all students, irrespective of socio-economic status, can engage comprehensively in contemporary educational methodologies.[22] Legal frameworks must evolve to address these realities, fostering responsibility and protecting the rights of all learners within the digital education environment. The successful incorporation of digital learning tools into public education systems presents both opportunities and obstacles. Policymakers must reconcile the advantages of innovation with constitutional mandates that ensure equitable access to quality education for all.[23] This requires a thorough understanding of the legislative and regulatory aspects of emerging technologies to prevent the exacerbation of systemic inequality in educational settings.

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[16] Karisma Erikson Tarigan, Ehsan Elahi, and Margaret Stevani, "Education Responses in Teaching during Covid-19: The Ongoing Result in Online Learning Implementations," *Journal of Learning and Development Studies* 2, no.1(2022): 9–30.

[17] Nomathemba Faustinah Ngcobo, "Enablements and Constraints in the Uptake of Digital Technologies for Teaching and Learning: Implications for the Development of Digital Literacies," *International Journal of Mobile and Blended Learning (IJMBL)* 14, no. 3 (2022): 1–14.

[18] Senad Bećirović and Mersad Dervić, "Students' Perspectives of Digital Transformation of Higher Education in Bosnia and Herzegovina," *The Electronic Journal of Information Systems in Developing Countries* 89, no. 2 (2023): e12243.

[19] Dhruba Prasad Niure, "Factors Motivating Public School Teachers to Enroll Their Children in Private Schools: A Phenomenological Study," *Education and Development* 31, no. 1 (2021): 1–18.

[20] Tarigan, Elahi, and Stevani, "Education Responses in Teaching during Covid-19: The Ongoing Result in Online Learning Implementations."

[21] Carmen Helena Guerrero-Nieto and Jairo Enrique Castañeda-Trujillo, "Facing Neoliberalism in Education: How English Language Teachers Enact Their Critical Identities," *TESOL Journal* 15, no. 3 (2024): e785.

[22] Phan Nhan Trung, "Factors Affecting the Role of State in Digital Transformation of Education in Vietnam ," *International Journal of Information, Business and Management* 17, no. 1 (2025): 73–92.

[23] Manish Soni, "A Literature Survey on National Education Policy 2020 (NEP 2020) and Libraries," *Journal of Learning and Educational Policy* 34 (2023): 13–23.

State Obligations in Technology-Driven Public Education

In the domain of public law, the state has an unequivocal obligation to respect, safeguard, advance, and actualise the right to education. This commitment is essential to guarantee that the right to education is attainable and is rooted in both national constitutions and international human rights agreements. The commitment entails an intrinsic obligation to avoid actions that obstruct educational access, to protect the educational opportunities offered by others, including private entities, and to adopt suitable measures that actively promote equal access for all. The importance of education as a public service persists, even when provided via private channels. This circumstance requires the state to maintain oversight of educational standards and ensure compliance with constitutional and legal regulations, to ensure that all educational provisions satisfy the criteria of quality, equity, and inclusivity. The state must establish regulatory frameworks to oversee the use of private educational technologies, ensuring that these private interactions do not undermine the public interest and the fundamental rights of students.

Technology as an Instrument for the Actualisation of Rights

Digital learning technologies provide substantial potential to greatly increase educational access and improve learning results, particularly in marginalised populations. E-learning platforms, AI-enhanced educational resources, and digital instructional methods can overcome conventional obstacles to education, facilitating greater flexibility and inclusivity.[24] Such improvements can successfully bridge deficiencies in educational offerings and customise learning experiences to meet individual student needs, thereby fostering learning efficiency and enhancing student engagement. Utilising technology as a means for the realisation of rights is consistent with the state's obligation to uphold educational rights. Nonetheless, this potential must be meticulously evaluated against the obligations of the state; delegating these responsibilities to private entities without sufficient oversight could jeopardise the fulfilment of educational rights, potentially exacerbating existing inequalities and enabling exploitation within the educational sector.[25] Consequently, it is the responsibility of the state to guarantee the effective and equitable use of technology, accompanied by safeguards to oversee adherence to educational standards and rights.

Challenges in Accountability and Governance

The incorporation of private entities into public education through digital learning platforms presents considerable accountability and governance issues. These difficulties require the establishment of comprehensive regulatory frameworks that specify the obligations and expectations of educational institutions and technology suppliers. States must enforce regulations to ensure that educational technology complies with basic educational standards, aligns with constitutional mandates, and provides equitable access to all students.[26] Effective regulation must also address the legal ambiguity surrounding the implementation of technology in public education and safeguard against potential abuses stemming from outsourcing significant portions of education delivery to private entities.[27] Accountability mechanisms must be established to prioritise transparency and ensure that public interests remain protected even in sectors increasingly driven by private innovations. The proliferation of technology in education raises concerns about data security and monitoring. As educational platforms collect extensive data on learners, from personal information to behavioural analytics, the risks associated with privacy breaches and unauthorised data usage are magnified.[28] The incorporation

[24] Siva Srivastava, "The Evolution of Education," *International Journal for Multidisciplinary Research* 5, no.5 (2023): 1–9.
[25] S RanjithKumar et al., "Block Chain and Edge Computing Base Design Secured Framework for Tender Allocation," *ECS Transactions* 107, no. 1 (2022): 4895.
[26] Salma Rabani et al., "The Role of Technology in Indonesian Education," *Journal of Computer Science Advancements* 1, no. 2 (2023): 85–91.
[27] Ebru Tekin Bilbil, "Neoliberal Governmentality and Consular Outsourcing: An Analysis on Visa Processing Arrangements," *Marmara Üniversitesi Siyasal Bilimler Dergisi* 6, no. 1 (2018): 97–122.
[28] Chang Lyul Jung and Alan Walker, "Obstacles to Regulating the Private Sector: The Case of Korean Long-term Care," *Asian Social Work and Policy Review* 16, no. 1 (2022): 33–42.

of surveillance systems disguised as monitoring educational participation creates ethical issues about learner autonomy and freedom. Creating comprehensive data protection laws will be essential to guard against these violations and ensure that student information is handled with the integrity and confidentiality it deserves.[29] These laws must also ensure that students are respected as autonomous individuals in their learning journey, rather than mere data points to optimise educational outcomes. Policymakers face the dual challenge of fostering technological advancements that benefit education while simultaneously safeguarding the rights and identities of learners in a rapidly changing educational landscape.

State obligations in technology-driven public education encompass a multifaceted approach, balancing the promotion of educational rights with necessary safeguards against the pitfalls of privatization, data exploitation, and loss of learner autonomy. As digital technology continues to evolve, the state's role in reinforcing educational equity, accountability, and quality in education delivery becomes increasingly critical.

Equality, Access, and the Digital Divide

The digital gap poses a considerable difficulty in modern education, especially in the realm of technology-driven public schooling. It is marked by inequalities in access to essential technology infrastructure, such as gadgets, internet connectivity, and electricity. Regions with insufficient or no internet connectivity lack the fundamental resources necessary for effective engagement in a digital educational setting.[30] The digital gap encompasses not just access to devices but also the quality and dependability of connectivity, as well as the consistent availability of electricity, all of which are essential for utilising digital technology in education.[31] This disparity disproportionately impacts marginalised groups, especially in rural and underprivileged urban areas. Families in these regions often lack the financial means to acquire computers, tablets, or dependable internet access, thus perpetuating educational disparities.[32] Moreover, physical location is essential, as rural regions are often inadequately supported by telecommunications infrastructure, which intensifies the digital divide faced by students and educators in these places.[33] The ramifications are significant: Insufficient infrastructure restricts students' access to essential digital learning materials, resulting in inferior educational outcomes relative to their metropolitan peers. Alongside infrastructure deficiencies, numerous socio-economic, geographic, and disability-related barriers impede fair access to education. Socio-economic status frequently influences an individual's or family's capacity to acquire essential technologies for digital education.[34] Students from low-income households face substantial obstacles due to their lack of access to necessary technology or internet services, leading to a self-reinforcing cycle of educational injustice. Furthermore, spatial inequalities endure; pupils in isolated or rural regions are less likely to possess equivalent access to technology, resulting in discrepancies in educational engagement and accomplishment.[35] Moreover, students with disabilities may face distinct obstacles that exacerbate the digital divide, including insufficient accessible technology or specialised resources tailored to their

[29] Renée De Nevers, "The Effectiveness of Self-Regulation by the Private Military and Security Industry," *Journal of Public Policy* 30, no. 2 (2010): 219–40.

[30] Olabisi Oluwakemi Adeleye et al., "Educational Technology and the Digital Divide: A Conceptual Framework for Technical Literacy Inclusion," *International Journal of Science and Research Archive* 12, no. 1 (2024): 150–56.

[31] Chen Wang and Li Si, "The Intersection of Public Policy and Public Access: Digital Inclusion, Digital Literacy Education, and Libraries," *Sustainability* 16, no. 5 (2024): 1878.

[32] Mehmet Karanfiloğlu, "Digital Literacy as a Catalyst for Sustainable Development," in *Digital Literacy as a Catalyst for Critical Thinking: From Media to Artificial Intelligence* (Springer, 2025), 155–88.

[33] Alexandra Hosszu and Cosima Rughiniș, "Digital Divides in Education. An Analysis of the Romanian Public Discourse on Distance and Online Education during the COVID-19 Pandemic," *Sociologie Românească* 18, no. 2 (2020): 11–39.

[34] Arfa Afzal et al., "Addressing the Digital Divide: Access and Use of Technology in Education," *Journal of Social Sciences Review* 3, no. 2 (June 30, 2023): 883, https://doi.org/10.54183/jssr.v3i2.326.

[35] Josefina Amanda Suyo-Vega et al., "Educational Policies in Response to the Pandemic Caused by the COVID-19 Virus in Latin America: An Integrative Documentary Review," in *Frontiers in Education*, vol. 7 (Frontiers Media SA, 2022), 918220.

needs.[36] Confronting these many obstacles is essential to ensure that all students can attain significant educational opportunities in a digital learning context.

Constitutional Implications of Unequal Access

The absence of technological access results in inequitable educational possibilities, which entails invoking constitutional considerations, especially with the right to education. Jurisdictions that enshrine education as a fundamental right must guarantee not only physical access to educational institutions but also access to essential modern learning instruments, including digital technologies. In places where educational rights are legally protected, unequal access to digital resources may be interpreted as a breach of these rights, prompting legal examination and possible remedy.[37] Therefore, legal frameworks must evolve to underscore the state's obligation to remove obstacles to technology access. This commitment is heightened in situations where students from marginalised or rural backgrounds cannot fully engage in educational activities due to inadequate access to digital technology.[38] The state's inability to ensure equitable access to technology resources can result in legal action, as it violates constitutional obligations related to the right to education.

The repercussions of disparate access to technology are especially significant for marginalised and rural students. These children often have considerable disadvantages, including compounded hurdles that influence their educational paths. The absence of access to digital resources restricts their capacity to interact with modern curricula that increasingly depend on technology.[39] This exclusion negatively affects their academic performance and maintains structural inequities that obstruct their prospects in higher education and the employment market.[40] Moreover, during crises like the COVID-19 pandemic, the ramifications of the digital divide become increasingly evident when educational institutions transition to online learning systems. Marginalised kids frequently lag, intensifying differences in educational achievement and perpetuating socio-economic divides.[41] Therefore, states must openly confront these disparities in their educational policies and frameworks, guaranteeing that all children, regardless of their circumstances, have substantial access to quality education.

Digital Literacy as a Constitutional Concern

Access to digital technologies is simply the preliminary step toward educational parity; the cultivation of digital literacy is equally vital. Access to devices and the internet alone does not ensure substantial engagement or efficient learning. Digital literacy, the ability to use technology proficiently for locating, assessing, and conveying information, has emerged as an essential competency in contemporary schooling.[42] In the absence of adequate training and assistance, students may find it challenging to effectively use accessible technology, hence exacerbating existing inequities within the educational system.[43] Moreover, digital literacy includes not just fundamental technological competencies but also critical thinking and civic responsibility, equipping pupils to navigate intricate digital landscapes with accountability and integrity. Institutions must prioritise the development of comprehensive digital

[36] Konstantina Martzoukou et al., "Digital Divides in Nursing Students: An Exploration of the Relationship between Self-Perceived Digital Competencies and Digital Barriers," *Journal of Documentation* 81, no. 2 (2025): 330–50.

[37] Danielle K Nadorff et al., "Down the Digital Delta: Health Information Inequities among Rural Mississippi Caregivers," in *Healthcare*, vol. 13 (MDPI, 2025), 2361.

[38] Srinivasan Venkatesan, "Digital Literacy in People with Disabilities: An Overview and Narrative Review," 2023.

[39] Yalalem Assefa et al., "Rethinking the Digital Divide and Associated Educational in (Equity) in Higher Education in the Context of Developing Countries: The Social Justice Perspective," *The International Journal of Information and Learning Technology* 42, no. 1 (2025): 15–32.

[40] X N Mashwama and B Madubela, "A Systematic Review of Academic Exclusion in Higher Education Institutions in South Africa: Causes, Consequences, and Remedial Measures," in *The Focus Conference (TFC 2024)* (Atlantis Press, 2024), 30–59.

[41] Stavros Sindakis and Gazal Showkat, "The Digital Revolution in India: Bridging the Gap in Rural Technology Adoption," *Journal of Innovation and Entrepreneurship* 13, no. 1 (2024): 29.

[42] Mpubane E Matlala, "The Role of the Legal Deposit Library in Bridging the Digital Divide: A Case Study of the Msunduzi Library in Pietermaritzburg, South Africa," *Research in Economics and Management* 5, no. 3 (2020): 151–71.

[43] Ritu Rana and Shweta Goel, "Accessibility of Digital Payments Methods and Challenges Faced by Users in Rural Areas of NCR: A Thematic Map Analysis," *Abhigyan* 43, no. 2 (2025): 161–78.

literacy programs that provide learners with the essential abilities to engage effectively in a technology-driven educational environment.[44] Considering the essential importance of digital literacy in facilitating educational access and achievement, the state is required to ensure that all students receive adequate training and resources. This obligation goes beyond the mere provision of technological access; it requires the execution of extensive digital literacy programs tailored to the distinct demands of varied learner demographics.[45] States must acknowledge digital literacy as a constitutional issue and include it in educational systems and policies. These initiatives should concentrate on providing students, especially those from marginalised and rural backgrounds, with the skills necessary to utilise technology successfully for educational and personal development.[46] As the digital landscape evolves, achieving effective digital inclusion is essential to fulfilling the constitutional obligation of providing equitable educational access to all learners. The interaction among access, digital literacy, and educational rights highlights the imperative for states to acknowledge and tackle the intricacies of the digital divide. By doing so, they can advance towards a more equal educational system in which all kids can prosper.

Comparative and Jurisprudential Perspectives

Judicial interpretations of educational rights concerning technology have markedly progressed, as courts contend with the ramifications of a progressively digitalised learning landscape. In some jurisdictions, courts have commenced recognising the right to access digital technology as inherently connected to the overarching right to education.[47] For example, in cases where inadequate access to technology has resulted in educational disadvantages, courts have recognised that the failure to provide such access can infringe on students' rights to a quality education. Recent decisions indicate a growing court acknowledgement of digital access as a rights issue, reflecting principles from international human rights agreements that underscore education as a fundamental right vital for the realisation of other rights.[48] Judicial bodies have recognised the imperative of ensuring that educational systems provide not only physical access to institutions but also essential digital tools and resources as part of upholding educational rights.[49] This acknowledgement has prompted demands for more inclusive educational policies that address the digital gap, striving to guarantee that all students, irrespective of socio-economic position or geographic location, can access equivalent educational opportunities.

Comparative Public Law Insights

The administration of digital education reveals significant disparities between the Global South and the Global North. In numerous Global North nations, comprehensive regulatory frameworks have emerged to govern the incorporation of technology into education, prioritising digital fairness and access as essential components of educational policy.[50] The European Union's Digital Services Act exemplifies a commitment to making digital platforms accessible and egalitarian, acknowledging the need to match technological use with democratic principles and human rights.[51] Conversely, numerous nations in the

[44] Miguel-Ángel Esteban-Navarro et al., "The Rural Digital Divide in the Face of the COVID-19 Pandemic in Europe—Recommendations from a Scoping Review," in *Informatics*, vol. 7 (MDPI, 2020), 54.

[45] Merja Saarela and Atte Partanen, "Essential Accessibility Information About Travel Chains for Everyone," in *Universal Design 2024: Shaping a Sustainable, Equitable and Resilient Future for All: Proceedings of the Seventh International Conference on Universal Design (UD2024), Oslo, Norway, 20-22 November 2024* (SAGE Publications Pvt. Ltd 1 Oliver's Yard, 55 City Road, London, EC1Y 1SP, 2024), 323–30.

[46] Ernest Abaho et al., "E-Booster Uganda: Towards an Inclusive Digital Economy in Uganda through Provision of ICT Services to the Underserved and Unserved Communities," *Universal Access in the Information Society* 24, no. 2 (2025): 1863–72.

[47] Ming-Sung Kuo, "On the Constitutional Question in Global Governance: Global Administrative Law and the Conflicts-Law Approach in Comparison," *Global Constitutionalism* 2, no. 3 (2013): 437–68.

[48] Giovanni De Gregorio, "Digital Constitutionalism across the Atlantic," *Global Constitutionalism* 11, no. 2 (2022): 297–324.

[49] Martin Mills, "The 'Trick of Law': The Hermeneutics of Early Buddhist Law in Tibet," in *Buddhism and Comparative Constitutional Law* (Cambridge University Press, 2022), 99–123.

[50] Adem K Abebe, Rosalind Dixon, and Tom Ginsburg, "Introduction to Comparative Constitutional Law in Africa," in *Comparative Constitutional Law in Africa* (Edward Elgar Publishing, 2022), 1–14.

[51] De Gregorio, "Digital Constitutionalism across the Atlantic."

Global South encounter systemic obstacles in developing analogous frameworks for digital education governance. Inadequate infrastructure, insufficient regulatory capacity, and socio-economic gaps substantially hinder the implementation of inclusive digital education programs. In this context, educational technology remains frequently unattainable for significant portions of the population, exacerbating inequities instead of alleviating them.[52] Comparative analysis indicates that countries that have enshrined access to educational technology in their constitutions tend to achieve superior results in closing the digital divide. Countries that incorporate technology access into their constitutional frameworks typically formulate more complete and prompt responses to educational digital inequities.[53] Canadian provinces that have included access to technology in their educational rights frameworks have experienced greater adherence to digital education requirements, indicating that constitutional assurances can lead to more successful public policy. Conversely, governments where such access is merely an informal expectation rather than a constitutional right often encounter difficulties in enacting substantial reforms in educational access. Some states in the United States lack legal requirements to guarantee that all students may access instructional technologies, resulting in ongoing disparities in educational engagement and attainment.[54]

The judicial acknowledgement of digital access and the comparative examination of governance strategies elucidate critical insights: effective governance requires strong legal frameworks that emphasise fair access to technology in education. Countries will gain from implementing comprehensive legislative measures that acknowledge the crucial role of technology in fulfilling educational rights, to avoid circumventing the challenges of marginalised access and resulting discrepancies in educational performance. As courts progressively acknowledge digital access as an essential educational right, the need for robust public law frameworks becomes critical. Comparative evaluations of responses to digital education in the Global North and South underscore the significance of constitutional protections in fostering inclusive and equitable access to education in various jurisdictions.

Developing Constitutionally Compliant Digital Education Policies

To ensure that digital education policies align with constitutional mandates, it is imperative to prioritize equity-based technology planning. This requires creating a framework that recognises the need for universal access and affordability principles in the deployment of educational technologies. Equity-based planning must consider socio-economic disparities to prevent the reproduction of existing educational inequalities within the digital sphere.[55] Policymakers should develop comprehensive strategies that bridge the digital divide, ensuring that resources are allocated efficiently and equitably to underserved communities, thereby promoting equal access to quality education.[56] Incorporating principles of universal access mandates that all students have access to essential digital infrastructure, such as devices and internet connectivity. Affordability should also be a guiding principle in policymaking, ensuring that technology is accessible to low-income families, mitigating financial barriers that can exclude vulnerable populations from participating in digital education environments. Such policies must be designed with the clear intention of upholding the right to education articulated in national constitutions and international covenants.[57]

[52] De Gregorio, "Digital Constitutionalism across the Atlantic."
[53] Tímea Drinóczi, "The European Rule of Law and Illiberal Legality in Illiberal Constitutionalism: The Case of Hungary," *SSRN Electronic Journal*, 2019.
[54] Ngoc Son Bui, "Global Constitutionalism: Asia-Pacific Perspectives," *Global Constitutionalism* 10, no. 2 (2021): 221–36.
[55] Farimah Salimi, "Aligning Policy and Practice: The World Bank's Approach to EdTech in Sub-Saharan Africa," *Policy Futures in Education* 23, no. 6 (2025): 1134–56.
[56] Chen Xiao and Doris Padmini Selvaratnam, "The Relationship between Family Education Expenditure and Education Equalization," *International Journal of Social Science and Human Research* 6, no. 07 (2023).
[57] Xiao and Selvaratnam, "The Relationship between Family Education Expenditure and Education Equalization."

Regulating Public–Private Partnerships in EdTech

As educational institutions increasingly form public-private partnerships (PPPs) with EdTech companies, it is essential to uphold constitutional principles within these collaborations. Regulations must be instituted to ensure that outsourced educational services comply with the same quality and equality requirements as public education systems.[58] This entails establishing legislative frameworks that specify the responsibilities of both public bodies and private service providers, safeguarding the fundamental rights of students throughout the process. Transparency, accountability, and public oversight are fundamental components of good governance in these public-private partnerships (PPPs). Policymakers should impose explicit reporting obligations on EdTech corporations regarding data privacy, educational results, and adherence to constitutional principles.[59] Furthermore, public stakeholders must have the authority to monitor and evaluate the effects of these collaborations on educational fairness, ensuring that financially constrained institutions do not compromise quality for cost reductions.[60]

Towards Inclusive and Rights-Based Digital Education

Advancing inclusive and rights-based digital education requires incorporating constitutional principles into the design and use of educational technologies. This approach must highlight both the significance of technological access and the need to foster environments that enable all students to interact meaningfully with digital resources.[61] Promoting digital literacy programs is a constitutional necessity to provide learners with essential skills for efficiently navigating and using technology. Educators and technologists alike should collaborate to develop EdTech solutions that incorporate universal design principles, ensuring that digital resources are accessible and beneficial for all learners, including those with disabilities.[62] This dedication to inclusivity fosters a sense of belonging in educational environments and upholds the rights of all students to equitable educational opportunities, irrespective of their backgrounds. Formulating laws and regulations for digital education requires a careful equilibrium between fostering innovation, adhering to constitutional requirements, and tackling the complex issues presented by the digital divide. By formulating constitutionally compatible digital education laws, effectively regulating public-private partnerships, and fostering inclusive practices, public education institutions can more adequately address the educational requirements of all learners in an increasingly digital world.

RECCOMENDATIONS

This article advocates for a constitutionally based framework for digital education governance that emphasises equity, accountability, and the safeguarding of rights. Digital education policies and EdTech procurement procedures must undergo obligatory constitutional impact studies to analyse their implications for equity, access, privacy, and governmental accountability prior to implementation. The state should implement comprehensive regulatory frameworks for educational technologies, establishing explicit standards for data protection, learner privacy, transparency, and public oversight, especially when private entities take on roles typically associated with public education. Mitigating the digital divide requires continuous, equity-focused governmental investment in broadband infrastructure, electricity supply, device accessibility, and persistent technical support, particularly for rural and historically marginalised populations. Digital literacy should be acknowledged as a

[58] Rohit Kumar Nag, "Is India Ready to Accept an EdTech-Intensive System in Post Pandemic Times? A Strategic Analysis of India's 'Readiness' in Terms of Basic Infrastructural Support," *Decision* 49, no. 2 (2022): 253–61.

[59] Sadruddin Bahadur Qutoshi, Zahra Jabeen, and Dil Angaiz, "The Paradoxes: Politics of Inequity-Policies for Higher Education in Pakistan," *Pakistan Journal of Social Research* 1 (2019): 9–17.

[60] Anne-Fleur Lurvink and Nicola J Pitchford, "Introduction of an EdTech Intervention to Support Learning of Foundational Skills in Sierra Leone: Policy, Teacher, and Community Perspectives," in *Frontiers in Education*, vol. 8 (Frontiers Media SA, 2023), 1069857.

[61] Paul E Pitre, "Parents Involved in Community Schools v. Seattle School District No," *Education and Urban Society* 41, no. 5 (2009): 544–61.

[62] Krzysztof Czarnecki, "Less Inequality through Universal Access? Socioeconomic Background of Tertiary Entrants in Australia after the Expansion of University Participation," *Higher Education* 76, no. 3 (2018): 501–18.

constitutional duty and systematically included in public education curricula and teacher training programs to enable learners to effectively interact with digital learning environments. Ultimately, all public-private partnerships in education must be regulated by enforceable accountability measures to ensure that objectives related to efficiency, innovation, or cost reduction do not compromise constitutional standards or diminish the state's fundamental obligation to provide equitable and quality education.

CONCLUSION

This article has shown that the integration of digital learning technologies into South Africa's public education system constitutes a fundamental constitutional shift rather than a mere pedagogical innovation. While digital education offers transformative potential, its unregulated adoption risks deepening existing inequalities and undermining the substantive enjoyment of the right to education. The study concludes that digital learning technologies must be governed through a constitutional lens that prioritises equality, access, and accountability. The state retains ultimate responsibility for ensuring that technological advancements serve the public interest and do not entrench exclusion or indirect discrimination. A rights-based, equity-driven approach to digital education is therefore essential to aligning innovation with constitutional imperatives. As digitalisation continues to reshape public education, the challenge for policymakers, courts, and scholars lies in ensuring that technological progress enhances, rather than erodes, constitutional justice. Properly regulated, digital learning technologies can become powerful instruments for advancing educational equity; left unchecked, they risk becoming mechanisms of constitutional regression.

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