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# SOUTH AFRICAN SCHOOLS: A LANDSCAPE OF DIGITAL DISPARITIES IN AN ERA OF UBIQUITOUS TECHNOLOGY

## ПІВДЕННОАФРИКАНСЬКІ ШКОЛИ: ЛАНДШАФТ ЦИФРОВИХ РОЗРИВІВ В ЕПОХУ ВСЕПРИСУТНІХ ТЕХНОЛОГІЙ

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**Alane NAIDOO**

*Head of Education, The Independent Institute of Education, Varsity College, Pretoria, South Africa.*

✉ **E-Mail:** *shamnaidoo@varsitycollege.co.za*

https://orcid.org/0000-0001-8427-0793

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## ABSTRACT

***Purpose.*** *This study examines digital disparities in South African schools in an era of pervasive digital technology. It critically explores the challenges schools encounter in reducing these inequalities. Twenty-five years into the 21st century, we observe an exponential increase in technological use across all aspects of life, including education. However, simultaneously, the digital gaps within schools appear to be widening. Digital learning should offer opportunities for everyone, not just a select few. Nonetheless, a global digital divide persists. In South Africa, this digital divide is even more significant. The country has some of the highest levels of digital inequality worldwide. For example, only 20% of schools have internet connections to enhance teaching and learning.*

***Methodology.*** *This study employed a qualitative research design grounded in the*

***Мета.*** *Це дослідження аналізує цифрові диспропорції в південноафриканських школах в епоху повсюдного поширення цифрових технологій. У роботі критично розглянуто виклики, з якими стикаються школи в процесі подолання цих нерівностей. Через двадцять п'ять років після початку XXI століття спостерігається експоненційне зростання використання технологій у всіх сферах життя, зокрема й в освіті. Водночас цифрові розриви в межах шкільної системи, здається, лише поглиблюються. Цифрове навчання має забезпечувати можливості для всіх, а не для обраних. Однак глобальний цифровий розрив і надалі зберігається. У Південно-Африканській Республіці він є ще більш значним: країна належить до тих, де рівень цифрової нерівності – один із найвищих у світі. Наприклад, лише 20% шкіл мають доступ до інтернету, здатного підтримувати навчально-виховний процес.*

***Методологія.*** *У дослідженні застосовано якісний дизайн, заснований на теорії*

*theory of critical digital pedagogy. The target population consisted of academic practitioners (teachers, Heads of Departments, Deputy Principals, and Principals) working in independent and public schools in Gauteng Province, South Africa. Non-probability sampling was utilised, and a sample size of 120 participants achieved the intended results. Data were collected through online surveys. The data obtained were analysed using content analysis.*

***Results.*** *Many South African schools still face digital disparities in this era of widespread technology due to a lack of funding, inadequate infrastructure for digitisation, high data costs, poor departmental support, and ineffective teacher training.*

***Conclusion.*** *A multi-faceted approach is essential to tackling the digital disparities among South African schools. This approach involves prioritising public-private partnerships for broadband development in under-resourced schools, engaging communities to address socio-criminal issues, enhancing access to digital tools through targeted funding, and advancing digital literacy.*

***Keywords:*** *ubiquitous technology, digital divide, critical digital pedagogy, digital transformation, digital accessibility.*

*критичної цифрової педагогіки. Цільову сукупність становили педагогічні працівники (учителі, завідувачі кафедр/відділів, заступники директорів і директори), які працюють у приватних та державних школах провінції Гаутенг (ПАР). Використано метод нерепрезентативної вибірки; вибірка зі 120 учасників дала змогу досягти поставлених завдань. Дані було зібрано за допомогою онлайн-опитувань і проаналізовано методом контент-аналізу.*

***Результати.*** *У багатьох південноафриканських школах цифрові диспропорції зберігаються навіть за умов широкої доступності технологій. Основними чинниками цього є: недостатнє фінансування, слабка цифровізація, високі витрати на інтернет, низький рівень підтримки з боку відповідних департаментів і неефективна підготовка педагогів.*

***Висновки.*** *Подолання цифрових диспропорцій у школах ПАР потребує комплексного підходу. Він охоплює пріоритизацію державно-приватного партнерства для розвитку широкосмугового доступу в школах з недостатнім ресурсним забезпеченням, активізацію участі місцевих громад у розв'язанні соціально-кримінальних проблем, розширення доступу до цифрових інструментів завдяки цільовому фінансуванню та розвиток цифрової грамотності.*

***Ключові слова:*** *всюдисутні технології, цифровий розрив, критична цифрова педагогіка, цифрова трансформація, цифрова доступність.*

## INTRODUCTION

In an era known as the digital age, where we are inundated by the Internet of Things (IoT), ubiquitous technology, pervasive computing, artificial intelligence, and ambient intelligence, there are still significant parts of our world that exist in what I call "digital darkness". Digital learning aims to create opportunities for everyone, not just a few. However, the National Education Infrastructure Management System (EIMS) (DBE, 2021) reports that out of 23, 276 primary and high schools (including 2, 154 independent schools), 4, 738 schools had internet connectivity for teaching and learning – meaning only 20% of schools had internet connections to enhance teaching and learning, while 80% (18,538, 538 schools) lacked internet connectivity for optimal student learning. A total of 6,770 schools (29%) were connected to the internet solely for administrative purposes, with no access for teaching and learning (DBE, 2021). Connectivity is no longer a privilege but a fundamental requirement for economic participation, education, innovation, and growth. Nevertheless, millions of people remain offline, excluded from the opportunities of the digital era (Malatsi, 2025). Millions of learners are being left out of the digital economy and, consequently, missing the boundless opportunities offered by digital literacy skills. This leaves them without vital life skills and renders them unemployable in the real world (Soobramoney & Govender, 2025). They cannot

participate in the digital economy because we inhabit a digital world; without access to digital technology, they cannot be part of that economy. The questions that emerge from these research issues are what digital disparities currently exist in South African schools in this age of digital pervasiveness, and what challenges schools face in bridging these digital gaps. Therefore, this study examines the digital disparities in South African schools amidst widespread digital integration and explores the challenges schools face in bridging this digital divide. This study is grounded in the theory of critical digital pedagogy.

## LITERATURE REVIEW

Digital inequality refers to gaps in knowledge and skills related to using digital and information technologies, shaped by demographics, socioeconomic status, and prior experience with technology. The issue goes beyond mere access, as disparities persist even among those with some connectivity (Bunmee, 2023). Digital equality has become a vital educational goal, ensuring fair participation in an increasingly digital world (Mikhailov et al., 2024). As technology is deeply integrated into work and daily life, digital equality – often highlighted in education policies and strategic plans—has emerged as a key principle for building a more inclusive and fair future in education. The digital divide is worsened by outdated hardware, slow internet, and limited access to paid content. These inequalities stem from challenges in three main areas: Availability – The presence (or lack) of essential infrastructure, including wireless data plans, broadband, and fibre-optic services. Affordability – The ongoing costs of devices and internet subscriptions, which can be prohibitive for many. Adoption – Barriers such as limited digital literacy or educational gaps that prevent effective internet use (Bunmee, 2023). The digital divide also affects the development of digital literacy skills, which involve effectively accessing, evaluating, and using digital information. Digital literacy is crucial for education and workplace success in this digital era. However, students lacking access to technology may miss out on developing these skills, putting them at a greater disadvantage (Miah, 2024).

Historically, discussions on digital equality have concentrated on access to information technologies, especially the internet, framing the issue as a divide between the "haves" and “have-nots” (Light, 2001; Oyedemi, 2012). While this focus was understandable during the early days of internet adoption, it later faced criticism for being overly simplistic because it failed to consider “what people are doing, and what they can do, when they go online” (DiMaggio & Hargittai, 2001, p. 4). In response to these critiques, DiMaggio and Hargittai (2001) promoted a broader understanding of digital equality, including the quality of internet use, users' autonomy, skills, goals, and available social support. Luo & Liu (2025, p.2) describe digital equality today as “a condition in which all individuals and communities have the information technology capacity needed for fuller participation in our society, democracy and economy, connecting digital equality with the achievement of civic participation and lifelong learning.”

Building on this perspective, Resta and Laferrière (2015) applied the concept to education, asserting that digital equality must go beyond mere access to computers. They developed a five-dimensional framework to define digital equality in educational settings, which includes: access to hardware, software, and internet connectivity; access to meaningful, high-quality, culturally relevant content in local languages; opportunities to create, share, and exchange digital content; the availability of educators skilled in using digital tools and resources; and access to high-quality research on how digital technologies can boost learning. Educational attainment is also recognised as a key

factor in the digital divide. A positive relationship between education and digital use results from greater awareness, improved training, and enhanced abilities to evaluate content. People with lower educational levels tend to have less material access, lower levels of digital skills, and use digital tools in less beneficial ways. Those with higher levels of education are more digitally engaged and will benefit more from technology in their everyday lives (Van Deursen et al., 2021).

Recently, scholars have increasingly recognised the highly complex nature of digital equality, emphasising the need for more critical and nuanced analyses of the concept (Willems et al., 2019). Ragnedda (2018) stresses that digital equality cannot be separated from wider social inequality, as digital disparities often mirror and reinforce existing socio-economic divisions. Similarly, recent scholars caution against viewing technology as inherently neutral, emphasising that discussions of digital equality must account for sociocultural constraints, systemic power imbalances, and the role of users' agency in adopting technology (Kotsokoane & Seeletse, 2025).

Additionally, access to digital content implies access to the internet, or at least to computers or mobile devices. However, even among those with the infrastructure to access digital educational content, those most likely to do so continue to be the most privileged groups, reflecting existing education and skills inequalities.

At the same time, other viewpoints highlight the importance of digital equality outcomes. For example, the U.S. National Digital Inclusion Alliance (2019) defines digital equality as "a state in which all individuals and communities possess the information technology capacity required for full participation in society, democracy, and the economy" (para. 2), linking it directly to employability, civic involvement, and lifelong learning. Similarly, Helsper (2021) offers a broader understanding that emphasises not only equitable access but also the significance of "preventing harmful consequences of digital engagement, both presently and in the future" (p. 46).

Although definitions remain contested, scholars (Mwansa et al., 2025; Mhlanga & Moloi, 2020; Czerniewicz et al., 2020) agree that digital equality is fluid, complex, and context-specific. The rapid shift from face-to-face to remote learning during the COVID-19 pandemic in South Africa further exposed deep-rooted inequalities. Learners in urban and better-resourced settings could continue their studies relatively easily, whilst learners in rural communities and those with disabilities faced considerable obstacles. This widened the digital divide and deprived many learners of constitutional educational rights (Czerniewicz et al., 2020; Mhlanga & Moloi, 2020). Mwansa et al. (2025) argue that rural areas in South Africa often depend on unreliable mobile networks due to inadequate funding for broadband infrastructure. Broadband access in rural South Africa encounters numerous infrastructural issues, such as limited network coverage, inconsistent electricity supply, and the high costs of installing and maintaining telecommunications infrastructure in remote regions (Mwansa et al., 2025). This study examines the complexities of digital disparities in South African schools and is based on the theory of critical digital pedagogy.

Critical digital pedagogy (CDP) originates from Freire's theory of critical pedagogy. It is an approach to teaching and learning based on fostering agency and empowering learners. CDP adapts critical pedagogy to the digital environment. It also involves engaging students through various learning styles (Smith, 2021). Each student has a unique combination of learning styles, and teachers need to create a learning environment and adopt strategies that incorporate all styles to maximise student engagement (Smith, 2021). Technologies will help schools address the challenges and

opportunities of our complex, increasingly interconnected world, promoting greater cultural and ethical awareness at the intersection of education, research, and technology. By using digital technology, education adopts a meta-connective pedagogy that reflects the ecological and transformative qualities of the digitally networked world (Lunevich, 2022). Key concepts such as identity formation, emergent communities, collaborative learning, interdisciplinary and transdisciplinary knowledge creation, teacher attitudes towards the relationship between learning and technology, learner engagement and online interaction, transformative digital literacy, meta-analysis of technology integration frameworks, methodologies for authentic digital engagement, and meta-connective approaches are fundamental to CDP (Lunevich, 2022). CDP is defined as the application of networked computational technologies to pursue the aims of critical pedagogy: ideological critique, challenging oppressive systems, and advocating for liberatory education for all. Furthermore, CDP involves applying philosophical tools from critical theory – including discourse analysis, counter storytelling, and critical hermeneutics – to computationally networked educational technologies and contexts (Aguilera & Salazar, 2023).

CPD in the classroom reflects the natural progression of discussions into alternative educational approaches and supports the idea that both students and teachers are creative, autonomous individuals. Currently, CPD focuses on understandings of equity and social justice in education, emphasising the notion that educational materials should serve the will of the learner to address their intellectual capacity, rather than stimulate dialogue around preselected issues, thereby encouraging conversation between teachers and learners (Lunevich, 2022).

In a CDP classroom, the teacher and learners not only engage in a dialogic exchange of opinions and are empowered, but they also critically analyse the characteristics and impacts of using any technological tool in the classroom. Technological tools, learning management systems (LMS) and social media do not dictate to teachers and learners how each of these should be used; instead, teachers and learners invent ways, techniques and manners of using these tools to suit their purposes, beliefs, practices and philosophy (Masood & Haque, 2021).

The digital platform is an empowering space that grants learners free access to deconstruct, elaborate, and critique any knowledge. Digital tools enable learners and teachers to collaborate on writing and projects, co-creating knowledge. It reduces the hierarchy typical of traditional classrooms and provides a platform for collaboration. An open space like cyberspace promotes collaborative problem-posing education by engaging learners and teachers in discussions, contrasting with the conventional banking education system (Masood & Haque, 2021). Data for this study were analysed through the lens of CPD.

## METHODOLOGY

This study employed a qualitative research approach. The aim was to understand the meaning of human action by describing the key features of human experience through a critical analysis of participants' responses regarding digital disparities in South African schools during an era of widespread technology. Participants' responses were analysed using a humanistic, interpretative approach rooted in the conceptual framework of digital transformation to gather detailed descriptive data. A descriptive-analytical research design served as the foundation for this study, as I had a theoretical understanding of digital disparities in South African schools and sought to examine

them further through both descriptive presentation and critical analysis of empirical data collected from the participants selected for this research (Kowalczyk, 2021). The research paradigm was based on CPD, examining the epistemological aspects of this theory. This intuitive and authoritative epistemological approach generated data rooted in participants' beliefs, intuition, expertise, or knowledge within their fields (Kivunja & Kuyini, 2017).

The target population for this study comprised academic practitioners (teachers, departmental heads, deputy principals, and principals) based in independent and public South African schools, using purposive sampling. The reason for selecting these participants was to gather diverse perspectives on accessibility, affordability, and adoption of digital tools in schools situated in the Gauteng region.

Data for this study were gathered through online surveys and questionnaires. The questionnaire consisted of three types of questions. Questions 1 to 3 identified the type of school (independent or public), the geographical location of the school (suburban, township, rural area, or central business district [CBD]), and the participant's role. Questions 4 to 9 required a “yes” or “no” response to generate statistical data. Questions 10 to 12 focused on challenges related to accessibility, affordability, and the adoption of digital tools, support received from the Department of Basic Education (DBE), and perspectives on the widespread digital divide in South African schools. Of an expected 180 responses, I received 120 valid responses.

I used content analysis to identify patterns in how concepts are communicated, understand the intentions of individuals or institutions, detect propaganda and bias in communication, reveal differences across various contexts, and analyse the consequences of communication content, such as information flow or participant responses (Luo, 2019). Both inductive and deductive content analyses were employed to define the codes and categories of analysis. In the inductive process, codes used to label the data were developed during coding based on the actual content of the data set.

Conversely, “content categories” were linked to the questions I posed to the participants. This type of analysis is deductive because it is grounded in the conceptual framework. These “content categories” are broad ideas or concepts within which several more specific content codes are grouped. The units of meaning were coded by recording the frequency of individual words and phrases. The set of categories was based on conceptual information derived from the interviews. Data interpretation followed after completing the coding and categorisation, involving synthesising and connecting categories to create a narrative (Vears & Gillam, 2022). The main categories identified include types of schools, geographical location, access to digital tools, challenges related to digitisation, support from DBE, and the digital divide in South African schools.

## RESULTS

The survey yielded the following demographic results about the types of schools and the geographical location of schools.

**Type of schools:**

- Independent – n = 34 schools,28%
- Public – n = 86 schools,72%

**Location of schools:**

- Suburbs – n = 84,70%

- Townships – n = 29,24%
- Rural – n = 5,4%
- CBD – n = 2, 2%

**Table 1**

*"Yes" and "No" responses for questions four to nine (number and percentage)*

| Questions | Percentage of "Yes" responses | Number of "Yes" responses | Percentage of "No" responses | Number of "No" responses |
|---|---|---|---|---|
| Does your school have an information and communication technology (ICT) lab/room? | **70** | **84** | **30** | **36** |
| Do the educators in your school have computers/laptops provided by the school for teaching and learning? | **46** | **55** | **54** | **65** |
| Does the school have projectors or TVs that may be used to project in every classroom? | **61** | **73** | **39** | **47** |
| Have proper screens/whiteboards in every classroom to display projected activities? | **70** | **84** | **30** | **36** |
| Do you have interactive whiteboards/smartboards in every class? | **22** | **26** | **78** | **94** |
| Do educators in your school have digital tablets/iPads provided by the school for their use? | **15** | **18** | **85** | **102** |
| Do the learners at your school have their own tablets/iPads that may be used for teaching and learning? | **13** | **18** | **87** | **102** |

The survey results in Table 1 show that most schools have basic ICT infrastructure. Specifically, 70% of schools reported having a dedicated ICT lab or room, indicating moderate support for digital learning environments. Similarly, 70% stated that each classroom has screens or whiteboards, showing that visual teaching aids are commonly available across schools. However, only 61% of schools reported having projectors or TVS in every classroom.

Teachers' access to digital devices remains inconsistent. Less than half (46%) of respondents said that teachers are provided with laptops or computers, meaning a majority (54%) lack such tools. The provision of tablets or iPads to teachers was even lower, at just 15%. These results highlight a significant gap in supplying teachers with

personal ICT tools, essential for lesson planning, creating digital resources, and integrating technology into teaching.

The availability of more advanced digital teaching tools remains limited. Only 22% of schools reported having interactive whiteboards or smartboards in every classroom. This low adoption rate indicates that some schools have adopted modern teaching technologies, which are still uncommon. Most schools' lack of these tools could limit interactive and collaborative teaching opportunities. Learner access to personal devices was reported as 13% having their own tablets or iPads, with the source stating 87% responded "No." The results emphasise that fewer than one in four learners access digital devices through the school, highlighting a significant barrier to digital learning. Learners are unlikely to engage with technology-enhanced learning approaches without direct device access.

Overall, the data suggest that while many schools in the sample have achieved some basic ICT readiness (labs, screens, and projectors), there is a significant shortfall in individualised access for teachers and learners. Teachers are not consistently provided with devices, and learners' access to personal ICT tools remains limited. Furthermore, the scarcity of advanced technologies such as interactive whiteboards highlights ongoing inequalities in digital classroom integration. The lack of efficient and effective teacher training programmes further exacerbates the digital disparities in schools. Participants commented: "Many teachers are not adequately trained to use these technologies or do not have adequate time to adjust their lesson plans in a way which accommodates the use of technology." "Not many teachers are educated in using ICT and rely mostly on students and student teachers for help".

Responses concerning challenges in digital accessibility, effective use of technology, support from the DBE, and digital disparities evident in South African schools show that, firstly, most schools do not permit students to bring their own devices due to concerns such as "students being mugged on their way to school, accessing social media in class, theft of devices at school, and not all learners can afford these devices." Secondly, many participants pointed out that limited digital accessibility, caused by financial constraints and the lack of practical technological training, is a key factor contributing to the digital divide and school inequalities.

This was supported by comments stating, "The cost to upgrade, as well as families that would not be able to purchase devices, should we choose to go totally 'Chalkless' – poor funding, nonpayment of school fees, high unemployment rates in the community, internet connectivity and data costs, ineffective teacher training, lack of evaluation and monitoring of training, and under-utilised ICT labs with outdated equipment." Thirdly, there was unanimous agreement among participants that schools do not receive sufficient support from the Department of Basic Education (DBE) to facilitate an effective digital transformation. All participants agreed that a significant digital divide persists in South African schools, despite the global rise in technology use.

The following statements confirm insufficient support provided by the DBE and the persistence of the digital divide in schools: "The provisional departments provide schools with very little digital support." "District officials are not adequately trained to assist schools with digital transformation." "DBE must provide public schools with more digital resources and funding." The digital divide continues to grow since there is no access to technology because the government doesn't make it a priority."

## DISCUSSIONS

- **Types of schools and geographical locations**

As of 2024, approximately 22,381 public schools and 2,469 independent schools exist. This shows that over 90% of the country's educational institutions are public schools, with independent schools making up a smaller share (Africa Check, 2025). The study reflects these figures to some extent, including 34 independent and 86 public schools in the survey. Most of these schools are in suburban areas and townships. However, in South Africa, the distribution of schools across suburbs, townships, and rural regions varies significantly. Rural areas generally feature more public multi-grade schools, while suburbs and townships tend to host more private and independent institutions (Statista South Africa, 2025). Consequently, the fact that only 4% of rural schools participated in this study limits its scope, as most public rural schools have limited access to and affordability of digital tools. The five rural schools involved have limited or no access to digital resources. Mwansa et al. (2025) support this, arguing that rural schools' lack of digital resources hampers their ability to access online learning platforms and educational materials. Nevertheless, the results also show that digital inequalities persist even in suburban and township schools in South Africa.

- **Access to digital tools**

While most participants stated they lack sufficient digital devices and technology for learning, some implied the devices were adequate, while others with devices reported they were not utilised optimally. Most schools do not use Learning Management Systems (LMSs); those that do, primarily independent schools, mainly rely on Google Classroom. The findings from this study regarding access to digital tools support existing literature, which indicates that accessibility extends beyond digital hardware or software like computers, tablets, and interactive whiteboards. It also encompasses inadequate infrastructure, such as electricity and high-speed internet. Unequal resource distribution, worsened by limited funding, impacts the availability of technology resources and training opportunities. A shortage of teacher training and support for effectively integrating technology into instruction leads to underutilising existing devices to enhance student learning (Miah, 2025). Furthermore, digital literacy is a crucial enabler of digital accessibility. It is vital for empowering learners and teachers to use ICT tools effectively. However, the study reveals that limited access to, or ineffective, training programmes hinder teachers from optimally employing digital technologies to achieve educational goals. Therefore, incorporating digital literacy skills into school curricula and teacher training programmes is fundamental to addressing digital disparities (Mwansa et al., 2025). In this digital age, where misinformation and digital manipulation can be widespread, CDP underscores the importance of developing digital literacy skills to enable learners to evaluate digital content critically, understand digital ethics, and use digital devices responsibly. CDP also uses digital tools to teach learners to recognise credible sources, identify biases, and create digital content reflecting their perspectives and experiences (Ncube & Tawanda, 2025).

- **Challenges related to digitisation**

As this study's findings indicate, South African schools remain a landscape characterised by digital disparities in an era of widespread technology, primarily caused by socio-economic inequalities. The main challenges include limited funding for resources and training, non-payment of school fees, and high unemployment rates within communities. Lower-income individuals often cannot afford digital devices or monthly

internet services. Those living in rural, remote, or disadvantaged communities may lack access to the broadband infrastructure necessary for connectivity. As more privileged communities gain internet access, the divide between those with and without connectivity will likely widen (IEEE, 2023). Affordability remains a significant barrier to ICT adoption in South African schools. The cost of data plans and digital devices often exceeds school budgets, leading to delays or avoidance of digitisation (Competition Commission South Africa, 2019; Mwansa et al., 2025). While socio-economic disparities are a fundamental obstacle to digitisation, digital inequalities worsen social and economic gaps in education. Learners from low-income or marginalised backgrounds tend to have limited access to technology and the internet, which can increase the achievement gap (Miah, 2024). Incorporating CDP further helps schools address local socio-economic issues. CDP can dismantle educational hierarchies among schools and foster inclusive learning environments. However, its success depends on overcoming specific socio-economic barriers within schools, such as limited access to digital infrastructure and a lack of government support (Ncube & Tawanda, 2025).

- **Support from the Department of Basic Education**

Most schools confirmed that they did not receive adequate training or support to use the devices at their disposal effectively or optimally. Support from the Department of Basic Education (DBE) concerning digital accessibility and effective use of digital technology ranged from none to minimal. Workshops conducted by District Officials were often ineffective. There was no follow-up, evaluation, or monitoring of implementation and execution processes. UNESCO (2023) affirms the importance of government support in addressing the digital disparities in schools by arguing that governments must ensure digital educational content strengthens national education systems and aligns with curricula and learning objectives. The 2004 White Paper on e-Education states that “every teacher and learner in General and Further Education and Training must have access to an educational network and the Internet”. The White Paper envisaged all learning institutions, including schools, connecting to the Educational Network and the Internet by the end of 2010 (DBE, 2023). However, more than a decade later, schools confirm that DBE’s strategic goals for 100% universal access to devices and connectivity for learners, teachers, and classrooms; teacher development to integrate ICTs into classroom practice; remote learning support for virtual classes across platforms; and digital content to support learning and teaching via various digital resources (DBE, 2023) have not yet materialised. The South African SA Connect programme faces challenges in school connectivity, with over 80% of schools now having some internet access. However, many still rely on slow 3G/LTE networks, which are unsuitable for teaching. Significant gaps remain, while over 545,000 learners and 30,000 teacher devices have been distributed, and thousands of classrooms have been equipped (Extensia Ltd., 2025). In a State of the Nation Address, President Cyril Ramaphosa confirmed that “over 5,000 schools have broadband connectivity for teaching and learning; however, work still needs to be done to ensure the 16,000 schools have suitable connectivity for teaching and learning, not only for administration” (Extensia Ltd., 2025, p.1). Focused departmental support will promote CPD using digital platforms to facilitate dialogue and participation. Online forums, collaborative tools, and social media can create spaces where learners can engage in meaningful discussions, share their perspectives, and collaborate on projects. These digital spaces can break down traditional classroom hierarchies, giving all learners an equal voice regardless of their physical location or background. By promoting inclusive participation, CPD helps to cultivate a sense of community and collective inquiry (Ncube & Tawanda, 2025).

– **The digital divide in South African Schools**

Schools unanimously agree that South African schools still face a significant digital divide, despite increasing global technology use. This divide hampers education by creating unequal learning experiences and widening the gap in academic achievement and digital skills between students with and without reliable access to technology. Such inequality results in poorer performance, fewer enrichment opportunities, and less preparedness for higher education and the workforce, further deepening socioeconomic disparities. The problem is worsened by inadequate teacher training in digital literacy and poor technology infrastructure in disadvantaged areas (Prysmian, n.d.; Outreach International, 2024). Addressing this digital divide is crucial to preventing South African schools from remaining a landscape of digital disparities in an era of widespread technology.

While increasing access to technology and the internet appears to be a straightforward solution, it alone will not resolve the issue. Digital literacy is vital for learners and teachers to use digital tools effectively. Funding for under-resourced schools can help bridge the digital gap and ensure all learners can access necessary resources. Collaborating with local businesses and community organisations can also assist schools in securing funding, technology, and additional resources (Miah, 2024). Schools in affluent areas or with more funding can provide more advanced digital learning tools and resources than those in poorer regions. This institutional digital divide reinforces existing educational inequalities and limits the potential for digital pedagogy to serve as a transformative force (Ncube & Tawanda, 2025) in promoting socially just pedagogies.

## CONCLUSIONS & RECOMMENDATIONS

Key developments and challenges must be addressed to eradicate digital disparities in South African schools and bring these schools into the digital age. While thousands of learner and teacher devices have been distributed, classrooms must be upgraded with ICT resources. Connectivity infrastructure must be developed by prioritising public-private partnerships for broadband expansion in under-resourced schools. The SA Connect broadband project must intensify efforts to ensure the remaining 16,000 schools have internet connectivity. Subsidy programmes should be implemented for affordable digital devices (Extensia Ltd., 2025; Mwansa et al., 2025).

School communities must unite to tackle issues such as vandalism, unreliable electricity, and the risks of learners taking digital devices home or bringing them to school due to theft. South African Telecoms Companies must zero-rate all access to educational materials. Internet access centres should be established in disadvantaged and rural communities, providing learners a free place to access learning materials. School curricula must be redesigned to integrate technology across all subjects. We must shift from viewing technology as an extra resource available only to privileged learners to recognising it as an essential learning tool, akin to writing implements and paper.

## CONFLICT OF INTEREST

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