



Digital Inequities and Societal Context: Digital Transformation as a Conduit to Achieve Social and Epistemic Justice

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Abstract. In society, digital technology has often been viewed as a solution to systemic inequalities. However, approaching digital technologies from a utility perspective places these tools at crossroads with broader social and contextual issues. This results in epistemological tensions rather than achieving the intended goal of institutional equity. South Africa is confronted with an unprecedented unequal access to quality education, particularly in rural and under-resourced communities. With this backdrop, the authors offer a theoretical critique of epistemological and ontological paradigms on the problematic complexities of digital transformation. They posit that digital transformation is critical to achieving social and epistemic justice, more so in the increasingly dynamic virtual spaces in education. Hence, this chapter offers constructive suggestions to further a paradigm shift on the myopic epistemic that imposes dichotomy in the higher education sector, thereby encumbering quality learning and development. Framing justice as equity and access allows for education to be viewed as a public good, hence the importance of creating commonplaces for knowledge development through constructivist-oriented practices. These commonplaces afford students unprecedented connections to widen their context of learning so to expand their perspectives, bypass gatekeepers to knowledge acquisition and create reciprocal relationships with their educators.

Keywords: Digital transformation · Digital inequity · Social justice · Epistemic justice · Digital divide · Digital capital · Digital economy

1 Introduction

The practicability of achieving institutional equity in the South African context poses a number of challenges given the uneven distribution of resources. Efforts have been made by the government through legislative instruments to ensure

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Published by Springer Nature Switzerland AG 2022

J. Abdelnour-Nocera et al. (Eds.): *Innovation. Practices for Digital Transformation in the Global South*, IFIP AICT 645, pp. 1–15, 2022.

https://doi.org/10.1007/978-3-031-12825-7_1

that all nine provinces are developed, however, the one-size-fits-all and vertical governance model has diminished the role of civil society. In an unequal society and culturally complex South Africa, a differentiated approach to development is crucial. Hence, the importance of understanding the interplay between conceptions of the digital era and societal context to build and support community-based initiatives. These conceptions, as solutions to systemic inequalities, are viewed through a set of ontological and epistemological assumptions, looking at the nature (context) of the world and about the knowability of this world [27]. Any effort made without societal context is flawed, hence the importance of understanding the entire economic development ecosystem. The value of digital transformation in an unequal society can only be realized once a complex mapping exercise of all variables has been achieved. Social justice can only be achieved once everyone has the opportunity to access resources, regardless of their social position, thus eliminating any disadvantage that could stand in the way of achieving their potential. This chapter views epistemic justice to be achievable when everyone, regardless of their social standing, can access information resources without being dominated in order to function at their optimal level.

Perhaps what is known from research is that the relevance of social, economic, political, and cultural power structures is important in achieving equity [7, 20, 30]. The timely adoption of cutting-edge digital technologies and equitable distribution of digital resources must be achieved to prevent the loss of significant opportunities. However, socio-economic challenges are a reality, especially in under-resourced communities, and these were made visible during the COVID-19 pandemic [20]. Importantly, this requires considerable expenditure of scarce resources to first develop and then support these under-resourced communities in developing economies. Thus, digital resources, such as information and communication technologies (ICTs), are considered contributing factors to social and economic disparities [3, 14]. Conversely, insufficient investment in digital infrastructure and tools has the potential to stifle economic activities and make it difficult for local people to participate in the global economy [7]. Exacerbating the slow pace in South Africa is the vertical governance model which results in a one-size-fits-all approach, where there are defects in all the structures of governance. Various sectors in South Africa, particularly the education and small businesses sectors, have not kept pace with the advances (however significant) of ICTs. For this reason, there have been stand-alone ICT innovations constraining country-wide digital transformation.

The journey towards inclusive and equitable growth is complex. It is therefore important that any development must be relevant to all community levels so that the journey is not futile. To leapfrog the economy and accelerate growth, South Africa should take advantage of digital technologies and a viable public–private partnership (PPP)¹ framework must be developed to attract private sector par-

¹ In line with the view of the World Bank, a PPP is a commercial legal phrase used to harness private sector investment in public assets and services. Some countries have crafted laws and regulations that guide the implementation of PPP endeavours.

ticipation in an effort to cultivate digital capital. Beyond financial investment in public assets and services, the collaboration ought to be built around capacity and expertise. Digital technologies, especially the internet, have become significant for social and economic development in South Africa and globally. With limited government resources in developing economies, especially in the global south, adopting a PPP approach is essential. Although the shift towards digital technologies has always been on the to-do list for businesses and education institutions, the COVID-19 pandemic accelerated this transition within these and various other sectors. This transition was not smooth as there were systemic deficits creating systemic inequalities that affected individuals and businesses [8]. This meant that despite all the affordances of adopting digital technologies, only a fraction of individuals and businesses with access to digital resources gained real competitive advantage. Therefore, it is with little doubt that the COVID-19 pandemic served as a catalyst for digital change, and more specifically, for the adoption of digital technologies. However this created a dichotomous scenario of the ‘have’ and the ‘have nots.’

At the core of this social and economic development is digital equity, which is instrumental in transitioning to a digital economy and in the provisioning of education. Resta and Laferrière identified the following five components of digital equity: (a) hardware; (b) software; (c) internet connectivity; (d) high-quality digital content; and (e) digital fluency [23]. Coincidentally, these are the essential basic components, the absence (or more appropriately, the unjust distribution) of which has perpetuated the notion of the digital divide as we have come to know it. Central to digital equity is digital capital, where users have access to digital technologies with the ability to use them for professional and personal purposes [31, p. 1]. Digital capital is inclusive of digital equipment, connectivity, and digital fluency [21]. Interestingly, Marolla underscores that “countries performing well on ICT do equally well on the [United Nations General Assembly’s] SDGs [Sustainable Development Goals], while those underperforming on ICT are also lagging on SDG achievement” [17, p. xiii], which is one of the key findings emanating from the *2017 Huawei ICT Sustainable Development Goals Benchmark*.

Yes, the potential benefits of adopting ICT at both community and individual levels have been well theorised, demonstrated, and are indeed innumerable [2,20]. Thus, what can South Africa and other countries of similar stature do to achieve digital equity, proliferate digital capital, and digitally transform their status quo? True digital transformation lies not just in the documented technological innovation it promises, but in deploying digital infrastructure, addressing challenges with internet connectivity, ensuring widespread access to computing devices, and building human capital and skills. Equitable provisioning of digital infrastructure is a necessary condition for sustainable economic growth, but for the internet to be an enabler, it must be accessible and affordable. The absence of massive and directed investments on digital infrastructure and skills has the

See for instance the policy developed by India: <https://ppp.worldbank.org/public-private-partnership/library/india-national-public-private-partnership-policy/>.

potential to perpetuate different forms of exclusion [16]. Any form of exclusion has far-reaching impact on the digital ecosystem and on economic development. Figure 1 illustrates a recent view of global internet access grouped by geographical region. This view shows the percentage of the total (national, regional, or world) population that uses the internet.

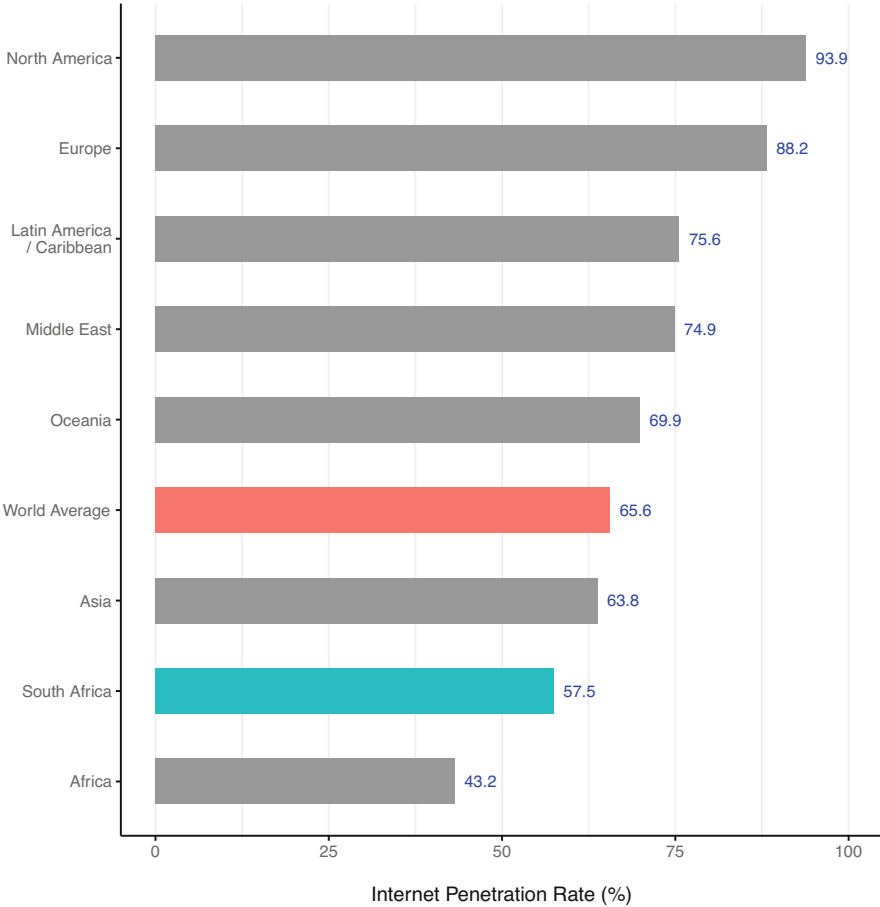


Fig. 1. World internet penetration rates by geographic region, including South Africa and the world average, adopted from Internet World Stats accessible at <https://www.internetworldstats.com/stats.htm> and based on estimates as at 31 Mar 2021.

From this illustration, it is clear that the African region faces a steep challenge if it is to catch up with the rest of the world in reaping the provisions of the conceptions of the digital era. Although the South African average of 57.5% is almost 15% higher than its regional average, it still falls short of the world average, implying that it is not exempt from these regional challenges. This has dire

consequences in the setting up of robust digital operations and the development of innovative products and services. While emphasis has been placed on huge investments in digital infrastructure across the country, the need to measure the impact on development is the missing link.

2 Ontological and Epistemological Assumptions

Equity and opportunity are intimately linked, and they exist in the context of human beings. In an unequal society, there exists different levels of access depending on the position an individual (or a classification of individuals) holds in that society's hierarchical setup [10, 26]. Those with strong social networks are more likely to be at the top of the hierarchy, and thus, have uncontested preference when it comes to accessing opportunities [10, 26]. In order to balance the scales towards achieving social and epistemic justice, this chapter argues that effective inequality monitoring systems are essential. Adopting digital technologies has the potential to improve transparency and accountability, more especially in underdeveloped (or developing) countries or global regions suffering from inequalities and multiple injustices.

Against this backdrop, ontological and epistemological paradigms afforded the authors the opportunity to carefully think about the South African context, especially in the context of education. Ontologically, the authors reflected on the nature of reality and the different variables leading to an unequal society [25]. Beyond understanding the contextual reality, the authors undertook an epistemological reflection on social justice and the fundamental principles of inclusion [12].

According to Hage, Ring, and Lantz, social justice is underpinned by fundamental principles, which include “values of inclusion, collaboration, cooperation, equal access, and equal opportunity” [12, p. 2795]. To this end, the authors explored the complex nature of digital transformation and the type of intellectual and financial resources required in order to realise these fundamental principles in the context of education, especially during a challenging pandemic period overwhelmed by uncertainty. Dlamini and Dewa argued about the importance of social and cultural capital in accessing various resources and development opportunities [9]. On the one hand, social capital is said to include “resources embedded in one’s social networks, resources that can be accessed or mobilized through ties in the networks” [15, p. 51]. In other words, “resources accrued by virtue of membership in a group” [5, p. 1042]. On the other hand, cultural capital is said to incorporate “scarce symbolic goods, skills, and titles” [5, p. 1042]. Arguably, the inequalities that exist around digital access and transformation are due to an imbalance in information society and cultural capital.

Cultural capital is considered a source of social inequality [4]. Therefore, the need for a systematic approach instead of a one-size-fits-all approach to adopting digital technologies is inevitable. The implementation of digital infrastructure must be accompanied by digital skills training and development opportunities that address all forms of inequalities, but most prominently access and adoption. In South Africa, the unequal distribution of digital skills is problematic at

best. For instance, this is evident with: blue collar workers, who hold a negative perception of technology and are convinced that they will lose their jobs to it [13, 18]; or teachers, who perceive technology as disruptive and time consuming [1, 19]. Thus, it is important to help those low-level workers understand the role of technology and digital transformation in their various professions.

The argument that this chapter brings forth is embedded on the assumption that there is a correlation between digital fluency and innovation, which in turn would drive entrepreneurial activities.

3 Conceptions of the Digital Era

Notable research efforts in the mid to late 1990s and early 2000s were focused on unravelling issues surrounding the then so-called *digital divide*. Scholars adopted a multitude of theoretical viewpoints (including social, economical, political, and cultural) in order to understand this phenomenon. This granted researchers and relevant authorities the ability to draw cross-cutting commonalities, and provided a basis from which theory and practice could benefit. The digital divide was primarily conceptualised as the apparent gap between those (individuals, communities, or nations) that have and those that do not have access to computing devices and the internet, prominently so in the underdeveloped (or developing) than in developed countries.

Thus, it goes without saying that digital (in)equity, digital capital, and all the other conceptions of the hitherto digital era—chief of which are: (a) digitisation²; (b) digitalisation (see footnote 2); and (c) digital transformation;—are all tightly-bound functions of the digital divide. This implies that in order for digital transformation to be realised, the concept and implementation of digitalisation must be fully mature, and for that to be the case, the notion of digitisation must reach the same level of maturity. Of course, realising digitisation implies an intentional and practical reconfiguration of the elementary components of digital (in)equity as contemplated by Resta and Laferrière [23].

At its core, digital transformation encompasses not only the adoption of cutting-edge digital technologies to unlock previously untapped potential and value, but also the scope within which, as well as the unprecedented scale and speed at which this adoption happens [32]. This has expanded the appeal of this phenomenon well beyond the business realm into other societal spheres, such as governmental and educational institutions, primarily concerned with serving a public good. The use of digital technologies in these and similar institutions is nothing new. What is new is the reimagined use of these cutting-edge digital technologies (primarily brought about by innovative advances in technology and

² For the definitions of *digitisation* and *digitalisation*, this chapter leans on the Oxford English Dictionary definition of the two terms. It defines digitisation as “[t]he action or process of digitizing; the conversion of analogue data [...] into digital form” and defines digitalisation as “[t]he adoption or increase in use of digital or computer technology by an organization, industry, country, etc.” (available by subscription at <https://www.oed.com/>).

the upskilling or reskilling of the people who interface with these technologies), coupled with their versatility and transformative power to catapult society into its ideal future.

With such prospects, digital transformation is well-poised as a redress tool through which social and epistemic justice can be realised. In the context of South Africa and other African countries however, although not impossible, the task at hand gets challenged by a systematically complex environment. That which is characterised by inequity, inequality, marginalisation, segregation, ruralism, and other unjust constructs inherited from colonial governments of yesteryear. Figure 2 provides some insights into just one facet of systematic complexity in the South African environment as reported by Statistics South Africa in the latest (2019) compilation of the *General Household Survey*.

Statistics South Africa further indicates that the proportion of households³ who have access to the internet anywhere is at an average of 63.3% nationally. This is an indication that in about two in three South African households, at least one member of the household has access to the internet, albeit in different places. Zooming in to only those households in which at least one member thereof has access to the internet at home, this figure drops drastically to an average of one in eleven (9.1%) South African households [28]. This is as shocking as it is significant, as it highlights the plight of access disparities in a country attempting to make formidable effort to institutionalise digital transformation.

Another critical question thus becomes: in spite of these systematic complexities (as corroborated by views depicted in Figs. 1 and 2), how can society leverage the prospects of digital transformation towards attaining institutional equity?

4 Theoretical Perspectives

In attempting to answer the preceding critical question, it becomes necessary to adopt a multi-faceted approach. There is no one fitting theoretical lens through which to fully explore and comprehend the utility of digital transformation as a conduit through which institutional equity can be achieved. More so under the contextual complexities that have so far been highlighted. However, framing institutional equity as a continual realisation of social and epistemic justice, paves a way for inquiry into this contextual juncture from an educational point of view. Thus, this chapter grounds its approach on, and draws its perspectives from: (a) the syntheses and theoretical perspectives put forth by Hage, Ring, and Lantz [12], Cazden [6], and Sutherland [29] on social justice in education settings; (b) the ideology of Walzer’s spheres of justice as interpreted and developed further by Resh and Sabbagh [22, 24]; and (c) Fuller’s conceptualisation of epistemic justice [11].

³ The *General Household Survey* reports that “the mean household size was estimated at 3.31 persons per household for the country, the estimate ranges from 3.11 in urban areas to 3.73 in rural areas.” [28, p. 8].

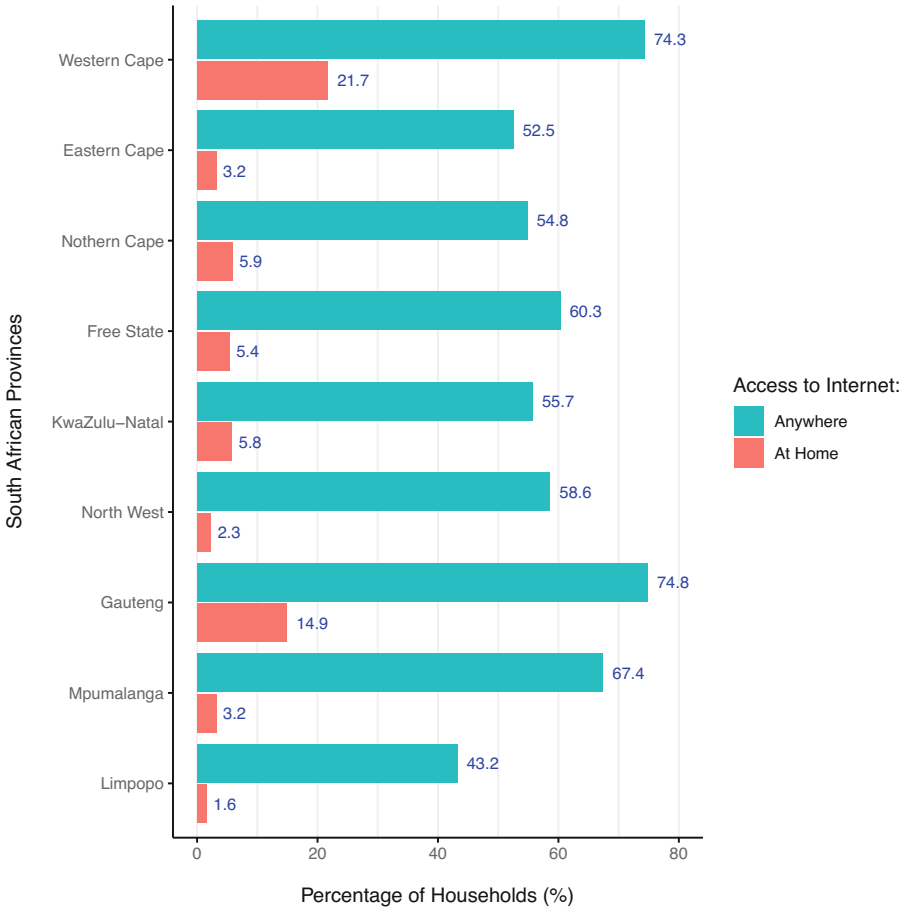


Fig. 2. Percentage of households with internet access in South Africa, adopted from Statistics South Africa [28, p. 51].

4.1 Social Justice and Education

Hage, Ring, and Lantz advance a general definition of social justice, stating that it concerns the “fair and equitable distribution of power, resources, and obligations in society to all people” [12, p. 2795]. They further state that this definition is underpinned by fundamental principles, which include “values of inclusion, collaboration, cooperation, equal access, and equal opportunity” [12, p. 2795]. The distributive nature of social justice is also emphasised by Cazden as one dimension of social justice, alluding that intellectual and monetary resources require equitable distribution in educational settings [6]. Another important dimension that she unpacks encompasses access to an “intellectually rich curriculum for all students” across and within all educational institutions and “not just in the rhetoric of policy and plans” [6, p. 182]. Clearly, a pathway leading to social

justice—particularly in educational environments—entails just distribution of key resources and requires further inquiry.

In his seminal work of *Spheres of Justice*, Walzer recognises the need to consider education (a critical social good⁴) as a distinct distributive *sphere of justice* [33]. He emphasises the importance of just distribution of social goods, in such a manner as not to incubate domination or foster an exclusionary society. Resh and Sabbagh build on this work by conceptualising five sub-spheres of justice within the education sphere, each of which is centred on the distribution of educational resources [22, 24]. These sub-spheres are: (a) the right to education; (b) educational places; (c); pedagogy; (d) grading; and (e) teacher–student relations. The subsections below delve into each of these sub-spheres, highlighting the rationale and importance of each as contemplated by Resh and Sabbagh.

The Right to Education. From a global perspective, the right to education has been recognised as a fundamental basic human right, advocated through and by reputable international organisation bodies (such as the United Nations General Assembly through its adoption of The International Bill of Human Rights as well as through its formulation of the SDGs—specifically SDG 4). It is also enshrined in the constitution of many countries, often with provisions, assurances, and protections from the state. This sub-sphere relates to the distribution of education goods, emphasising the provision of access to educational institutions, and includes the allocation of all the requisite resources necessary to realise this right.

Education Places. This sub-sphere pertains the allocation of learning spaces to students. This allocation is often an autonomous exercise taking place within educational institutions at the discretion of the institutions’ leadership bodies and teachers. This sub-sphere also relates to the distribution of learning opportunities available to students once they have been allocated to various learning spaces. Resh and Sabbagh argue that it is this allocation that regulates the distribution of these learning opportunities, including the access to knowledge, and it is often acknowledged as a fundamentally meritocratic and competitive process owing to the limited and divisible number of learning spaces available for allocation.

Pedagogy. This sub-sphere relates to the pedagogical practices which teachers adopt in the teaching and learning processes. At their core, these include the philosophical and methodological approaches to teaching and learning, and at the very least, encompass the way teachers operationalise classroom discourse, the way in which they encourage learning, and the manner in which they promote knowledge acquisition. The need for just distribution of pedagogical practices cannot be overstated as they have a direct influence on learning opportunities

⁴ A *social good* is not universally defined but rather it is a contextual intrinsic function (or construct) of the sphere within which it is located or it is the actual sphere itself.

from which students can learn and develop to ultimately become successful contributors to society.

Grading. Grading is an evaluative process which is central in the teaching and learning processes. It allows for teachers to keep abreast with student performance, while also serving as a gatekeeping mechanism for various other subsequent stages in the life of a student all the way up to determining employment opportunities. Much has been written about the psychological effects of grading on students. This sub-sphere is concerned about the just distribution of grades in classrooms, especially considering the differential and meritocratic rules that apply to the allocation thereof.

Teacher–student Relations. Resh and Sabbagh highlight several relational goods in need of just distribution when it comes to teacher–student interactions in educational institutions. Included in these are help (in various forms as would be needed by students from time to time), attention, encouragement, respect, affection, and discipline. This sub-sphere relates to the distribution of these relational goods, particularity because any perceived injustice in their distribution may invariably lead to attitudinal and behavioural consequences on the part of students.

4.2 Epistemic Justice

Epistemic justice is often interpreted and interrogated in terms of its inverse, epistemic injustice. This simplistic, two-dimensional approach not only dwarfs the intellectual importance of epistemic justice, but also undermines the efforts of those scholars who are at the forefront of epistemic justice inquiry. Arguably, attempting to advance research on matters pertaining knowledge and power is a huge and daunting undertaking, however, not tackling it head-on is an epistemic injustice in itself.

In a formidable attempt, Fuller simplifies the notion of epistemic justice, asserting that it “concerns the optimal distribution of knowledge and power in society” [11, p. 24]. He dissects the much familiar aphorism *knowledge is power*, illustrating the dynamism central to the knowledge–power reciprocal relationship. He goes on to suggest that there are essentially two approaches through which epistemic justice can be achieved. The first, he suggests, is to “inhibit the power effects of new knowledge by distributing it as widely as possible” [11, p. 25]. This implies that the inability to effectively distribute knowledge renders those that possess this knowledge undesirably powerful. The second approach, Fuller suggests, is to “define a piece of knowledge in terms of the functions it serves” [11, p. 25], an approach that would potentially spur individuals on to founding alternative approaches to serving those functions. This approach cultivates innovation and encourages epistemic diversification, which are the essence of epistemic justice.

The reality of the knowledge–power dynamic is that it is accumulative and compounds over time. This has allowed for certain sectors of society to accumulate specific forms of knowledge over long historical periods of time, resulting in pockets of powerful societal clusters. This is particularly evident in countries which have recently emerged from the clutches of colonialism, or those deemed to be underdeveloped (or developing), or both. Fuller argues that it thus becomes the function of the state to “regularly redistribute the advantage that these forms of knowledge have accumulated over time” [11, p. 26] through ingeniously institutionalising epistemic justice in educational institutions at the very least, but with the aim of achieving much grander scales of institutionalisation.

4.3 Pursuing Institutional Equity

The catalyst in the pursuit of institutional equity through adopting a social and epistemic justice approach is knowledge, and the acquisition of this knowledge must happen in commonplaces attuned to this process. These commonplaces must be characterised by fair distribution practices of social goods within each sub-sphere of justice in order to be socially just, and must encourage innovation, collaboration, and epistemic diversification. Through broad digital transformation efforts, these commonplaces can manifest as digital learning platforms, however it remains imperative to further probe:

1. In what ways are digital learning platforms creating environments of knowledge acquisition and widening the context of learning to cultivate equity? Or put differently, in what ways *can* digital learning platforms create environments of knowledge acquisition and widen the context of learning to cultivate equity?
2. What are the perceptions that advance or inhibit educators’ transition to constructivist-oriented practices in digital learning platforms to achieve instructional equity?

The scope of these digital learning platforms ought to extend beyond the ideology of learning management systems and massive open online course platforms. They ought to be context-relevant entities—favouring virtual learning communities or virtual communities of practice—ripe with opportunities for members to learn through and from each other, collaborate on ideas, and encourage a culture of social entrepreneurship and innovation. These are key constructivist-oriented practices which if attainable, will serve as a societal bedrock in the transitioning to a digital economy.

5 Discussion and Implications

Digital technologies, as the hallmark of civilisation, need to be widespread across the country otherwise digital transformation, together with all its prospects, will remain a pipe dream. Marolla attests that digital dividends have the potential to

help countries achieve higher-quality economic growth and alleviate social and economic disparities [17]. Therefore, the South African *National Development Plan 2030*, which sets out a long term vision of the country, must be operationalised through context-relevant community-based initiatives. This will go a long way towards avoiding a one-size-fits-all approach and will instead create responsive ICT-driven socio-economic development policy and rollout plan to empower strategic groups at various levels in both rural and urban areas.

This policy and rollout plan ought to be accompanied by measurable deliverables aimed at attacking inequality in its various manifestations, while making significant strides towards a knowledge-based information society. This attack on inequality must be strategic and coordinated through meaningful investments to improve digital infrastructure access, develop and harness appropriate digital skills, and improve the quality of education. Importantly, it must aim to build the digital capacity of the state through community-based programmes to overcome the current structural defects and revolutionise the digital space. Digital transformation has the potential to foster social inclusion and expand participation in economic activities. However, it must be institutionalised to improve coordination and PPPs. This is to ensure that digital infrastructure and fluency is fairly distributed to promote greater digital transformation inclusion.

The theoretical grounding of this chapter is that social and epistemic justice breed equity. Thus, engaging with and understanding the theoretical underpinnings of both social justice and epistemic justice is necessary in order to inform inquiry into how digital technologies can assist towards attaining institutional equity. Notwithstanding, Sutherland warns that “digital technologies can exacerbate inequalities and so a much more critical approach has to be taken with respect to the relationship between digital technologies and social justice” [29, p. 24]. Therefore, it is important to maintain an objective outlook as we navigate the pursuit of justice (and thus, equity) in and through education.

6 Conclusion

This chapter has presented a critical argument on: (a) a foundational lack that systematically prohibits society from leveraging the conceptions of the digital era (digitisation, digitalisation, and digital transformation); in order to fulfil (b) the urgent need to address matters pertaining digital equity and digital capital; through (c) harnessing the power and utility of these conceptions of the digital era, under favourable conditions, for achieving institutional equity and transitioning to a digital economy. It has further argued for: (d) the need for context-relevant digital learning platforms that will create environments for knowledge acquisition, through constructivist-oriented practices, in order to achieve institutional equity; functioning under (e) a viable PPP framework. The thread that holds all of this together is just access to both digital devices and the internet, which remains a jarring issue faced by underdeveloped (or developing) countries or global regions as Figs. 1 and 2 depict.

Attending to each of these five arguments put forth requires extensive pragmatic and empirical inquiry efforts. If South Africa and other African countries

are to pull themselves out of this depicted situation, such inquiry efforts must be self-driven and must invite equal participation across all sectors, least of which must be the state, academia, and private organisations.

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