

## COVID-19 Pandemic: Inadequate Digital Infrastructure and Shortage of Technically-Trained Teachers Hinder Schooling of Children with Disabilities in Kenya.

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### Abstract

An inefficient digital infrastructure and a shortage of technically-trained teachers compounded the effects of the COVID-19 pandemic, resulting in insufficient education of children with disabilities and erosion of their disability rights. This paper uses situational analysis to examine the impact of school closure on the education of students with disabilities in the period of COVID-19 pandemic. Findings show that children with disabilities have lost ground academically because of school closures and COVID-19-related biases. Considering the consequences of this pandemic, education opportunities for learners with disabilities remain unpredictable. This generation of children with disabilities is in a precarious situation and their educational opportunities may be derailed considerably unless disability-focused mitigating measures are implemented. Since education is significant in disaster preparedness, risk management, and recovery, the government's COVID-19 mitigation efforts should include special needs learners to limit the negative effect of school closure on their schooling. Equally important, recovery programs should consider investing in both the digital infrastructure and training teachers' competence in online pedagogical practices and computer literacy.

**Keywords:** disability, education, pandemic, digital, infrastructure, teachers

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### INTRODUCTION

The 1994 United Nations Educational, Scientific and Cultural Organization (UNESCO) Salamanca Statement, which Kenya adopted, require countries to design educational systems and implement educational programs that meet the needs of diverse children. It specifically calls on countries to establish education systems that support schooling of children with disabilities in regular schools with adapted education to combat and prevent biases and build up an inclusive society (UNESCO, 1994). The Salamanca Statement followed the 1990 World Conference on Education for All (EFA) that called every country to universalize adequate basic education to end poverty (World Conference on Education for All [WCEFA], 1990). In 2000 and 2009 World leaders further committed to promote inclusive education for children with disabilities (UNESCO, 2009). Because of these initiatives and Kenya's drive to achieve Education 2030 (UNESCO, 2016), there has been record student enrollment in primary and secondary schools (Kiru, 2019; Mulinya & Orodho, 2015; Nyeris & Koross, 2015). According to the Ministry of Education (MoE) 2018 Enrolment Estimates report, pupil population in the Basic Education (i.e., from early

childhood development to secondary) rose from 12.9 to 17 million between 2009 and 2018; and the total Basic Education institutions also increased from 67,051 to 96,920 during the same period (MoE, n.d.). Equally, according to the UNESCO Institute for Statistics 2014-18 data, Kenya Basic Education has seen declining numbers of repeaters, decreased student-teacher ratio, increased school retention rate, a low school dropout rate, increased rate of transition from primary to secondary school, and an increased literacy rate of the population, especially in the age bracket of 15–24 years (UNESCO, n.d. -c). Increased population of Kenyan learners attending school is attributed to the implementation of free primary education in 2003 and secondary education in 2008 and a liberalized higher education in 1990s (Mulinya & Orodho, 2015; Oketch & Rolleston, 2007). Despite improved schooling, the 2014 report of the survey conducted by the Ministry of Education Science and Technology and Volunteer Service Oversees (MoEST & VSO) and UNESCO (n.d. -a), showed that millions of children and youth with disabilities remain illiterate as education remains inaccessible. Due to cultural and infrastructural barriers, a few are able to access schools or quality education meant to prepare them for adulthood (Kiru, 2019; MoE, 2009; Nyeris & Koross, 2015). This low school attendance for children with disabilities has been exacerbated by natural disasters (Muhumuza, 2020; UNESCO, 2020; United Nations Office for Disaster Risk Reduction [UNISDR], 2015).

As COVID-19 pandemic evolved in a nonlinear manner, learning institutions are likely to remain closed for the better part of academic year 2020-2021 (BBC, 2020), keeping learners at home, if projections of how the coronavirus may spread are borne out. Learning loss will be greater the longer the school interruption persists. Already, the suspension of learning in all education institutions has negatively impacted children with disabilities, leaving them predisposed to failure in later life. Even though children with disabilities are typically left behind in disasters (Muhumuza, 2020; UNISDR, 2015), lack of a playbook and scarcity of information make matters worse. The novelty of COVID-19 pandemic means there are no studies on its impact on the education of children with disabilities in Kenya. Considering present and future harm to the wellbeing of learners with disabilities, this paper examines the consequences of COVID-19-induced school closures on the wellbeing of children with disabilities. The purpose of the study is to assess the impact of this pandemic on Basic Education of learners with disabilities and support disaster preparedness and risk reduction and recovery programs (UNISDR, 2015). Therefore, the objective is to identify factors affecting implementation of digital learning in Basic Education for learners with disabilities in order to make them accessible. To achieve this objective, the study was guided by the question: What are the short- and long-term impacts of COVID-19 pandemic on schooling of children and youth with disabilities in Kenya?

## **Education and children and youth with disabilities**

### ***Disability prevalence***

There is no precise population data for Kenyans with disabilities in previous censuses—1948 (when Kenya was a colony administered by the British), 1969, 1979, 1989, 1999, 2009, and 2019 (Kenya National Bureau of Statistics [KNBS], 2019; MoEST & VSO, 2014). The Kenyan population in 2019 was 47.6 million with 0.9 million people living with disabilities (2.2% national disability rate) (KNBS, 2019). This rate is quite below the World Health Organization (WHO) estimate that suggests that about 15% of any population are people living with disabilities (2011).

Based on the 15% estimate, this would translate to 7.14 million Kenyans with disabilities (WHO, 2011). It is estimated that out of this 15% prevalence rate, 25% are school aged children with disabilities (i.e., 1.785 million learners with disabilities). Also, the 2019 census revealed that about 18 million Kenyans attended pre-kindergarten through college (Owino, 2020). Going by the 2014 MoEST and VSO Report that showed 13.5% disability prevalence among children ages 3–24, roughly 2.43 million students have a disability.

### ***Access to education and (dis)empowerment of children with disabilities***

In the past five decades, Kenya has invested in education to improve literacy and quality of life for its citizens, including those with disabilities (UNESCO, n.d.-c). Special Needs Education (SNE) in Kenya was first established by missionaries (African Union of the Blind [AFUB], 2007); but, since its independence from Britain, the Kenyan government has expanded education opportunities for children with disabilities. For example, with the introduction of universal education in 2003, the government has provided US\$30 per child per year to support their basic education (MoEST & VSO, 2014). School enrollment has, therefore, risen since independence, but the number of learners has increased drastically, especially with the introduction of universal primary and secondary education and the emphasis on accessible and quality tertiary education (Kiru, 2019; Nyeris & Koross, 2015; Oketch & Rolleston, 2007). Still, education remains inaccessible for children and youth with disabilities. It is estimated that over 90% of children with disabilities did not access Basic Education pre-COVID-19 pandemic (MoEST & VSO, 2014). The MoE (2009) estimated that 750,000 school-aged children with disabilities were not accessing Basic Education.

The 2019 population and housing census revealed that the number of students in pre-primary school was 3.3 million, 10 million in primary school, 3.4 million in secondary school, 500,000 in middle-level colleges, and 471,000 in universities (KNBS, 2019). Based on the 15% WHO population estimate, learners with disability may be 2.7 million, or 2.43 million based on the 13.5% MoEST and VSO disability prevalence rate (2014). Going by MoEST and VSO rate, there are 1.75 million children with disabilities in primary school, 570,000 in secondary school, and 110,000 in tertiary institutions. The 2009 MoE report revealed that in 2003, 86,424 children with disabilities were in school—13,303 were enrolled in special schools, and 73,121 were in special units and integrated programs attached to regular schools. That number in 2008 had increased to 37,202 students in special schools and 171,079 in special units. During the same year, there was a total of 8,563,821 primary school students and a total of 1,382,211 secondary school students (MoEST & VSO, 2014). The total enrolment of students with disabilities in primary school was 22,000 in 1999, 26,885 in 2003, and 45,000 in 2008. Also, Special Schools Heads Association of Kenya reported that over 100,000 children with disabilities were out of primary and secondary school (i.e., had not attended or had dropped out) and only 645 students with disabilities of the 450,000 total student population were in over 70 public and private universities (Wanzala, 2016).

In all instances, the disability prevalence rate is below 13.5% (MoEST & VSO, 2014). The discrepancy in access to Basic Education between children with and without disability has been ongoing since independence, and after the government implemented free universal education (MoEST & VSO, 2014). Overall, discrepancies in the data is due to underreporting as well as

challenges with data collection including insecurity and limited resources (e.g., vehicles, trained personnel). Lack of actual population of people with disabilities or statistics of children with disabilities aged 0-21 years make SNE planning difficult and contributes to insufficient implementation and ineffectual management of disability programs. According to the MoEST & VSO (2014) report, children with disabilities lag behind their peers without disabilities in education mostly because of inaccessible physical structures (e.g., classrooms, libraries, toilets), lack of or limited resources (e.g., special education teachers, laptops), and inadequate services (e.g., assessments services). As a result, Kenya did not achieve the 2015 EFA goals (WCEFA, 1990).

### *Disaster education for children with disabilities*

Education is instrumental in the empowerment of people with disabilities, particularly in the 21<sup>st</sup> century where technology use has sky-rocketed in virtually every realm of life—education, health, agriculture, commerce, and the sports industry (Crockett et al., 2019). Improved technology has enabled people with disabilities to participate in various activities, such as learning, employment, community participation, leisure and recreation, and even gaining a post-secondary education. All these have led to improved quality of life for people with disabilities who manage to access these opportunities. Even though there are greater opportunities today for people with disabilities in comparison to earlier years, they are still vulnerable to environmental factors. Often, the limited gains people with disabilities have made, especially in the education sector, can be lost when disasters occur. Unfortunately, there are increased disasters globally, mostly attributed to climate change (Field et al., 2012; Tanaka, 2005; UNISDR, 2015). Disasters such as droughts (Willett & Sears, 2018), wildfires, floods (Krause & Otenyo, 2005), earthquakes (Muttarak & Pothisiri, 2013), hurricanes, plagues, pandemics, and terrorism (Field et al., 2012) have serious consequences on individuals, communities, and the country, affecting the economic, physical, political, social, and cultural structures of many societies (Hoffmann & Muttarak, 2017; International Monetary Fund [IMF], 2020; Krishna et al., 2018). Disasters can be very devastating (Krishna et al., 2018); therefore, it is critical to prepare individuals and communities for disasters because those who are aware of them tend to cope and recover much better than unprepared individuals and communities (Chan, 2014; Krishna et al., 2018; Tanaka, 2005; UNISDR, 2015). The occurrence of disasters exposes children to all kinds of harm and exploitation, especially those with disabilities (Masten, 2014; Masten & Narayan, 2012; McDermott & Cobham, 2014; Mitchell & Borchard, 2014).

The government has taken measures, mostly legislative, to support the inclusion of individuals with disabilities in Kenya (Kiru, 2019). The right to education is espoused by the Persons with Disabilities Act of Kenya 2003 and the 2010 Constitution of Kenya (Republic of Kenya, 2010). Also, Kenya is party to many international treaties, including the UN Convention on the Rights of People with Disabilities (CRPD), ratified in 2008, and the 1994 UNESCO Salamanca Statement (Centre for Studies on Inclusive Education, 2020). Global leaders (including the Kenyan President) adopted the UN 17 SDGs 2030 on September 25, 2015 to end poverty among other intentions (B1G1 Business for Good, n.d.). Besides, Kenya has implemented policies to support inclusion. In 2016, Kenya adopted the Eurocode for its construction industry (Kimani

& Musungu, 2010). The Eurocode is intended to harmonize practices within structural, civil engineering, and building works and to address the needs of people with disabilities. The Eurocode on *Safety and accessibility* states, in part that “construction works must be designed and built taking into consideration accessibility and use for disabled persons” (EUR-Lex, 2011, p. L 88/34). Still, increased awareness of disability rights has not matched practice as big gaps persist between the laws and implementation. Kenyans with disabilities are failed at many levels, especially by government agencies; for example, the Kenya Bureau of Standards fails to enforce codes to ensure development of accessible environments, including schools (Republic of Kenya, 2009).

The responsibility of the Kenyan government to protect and advance the rights of citizens with disabilities have been instrumental in provision of SNE, which have contributed to their increased school enrollment. Still, millions of children and youth with disabilities do not access or receive a quality education to be prepared for college and for a career. Unfortunately, there is little effort to address educational issues such as school closure due to COVID-19 pandemic owing to inadequate disability data and poor planning. Whereas education is part of disaster management and recovery process (UNISDR, 2015), there is dearth of information on disaster impacts, preparedness, and risk reduction and recovery on learners with disabilities. Given that most Kenyans with disabilities live in poverty due to a lack of formal education and are vulnerable to disasters (UNISDR, 2015), this study takes a closer look at the impact of school closure on the few learners with disabilities to postulate their post-COVID-19 education and, therefore, support their recovery process.

### **Accessing and using archival materials**

This research used disability studies framework (Danforth, 2014), which postulates that people with disabilities are economically, socially, culturally, linguistically, and politically marginalized by societally established hegemonic tools (e.g., inaccessible education, negative attitudes, culture of deficit, and inaccessible infrastructure) rather than their disability to sustain nondisabled people’s dominance. Considering that multiple factors impact Kenya at individual and systemic levels, this study also used a situational analysis framework to examine the schooling of children with disabilities during COVID-19 pandemic. Situational analysis suggests that research of a phenomenon impacting individuals and organizations and authentic solution to the problems, can be achieved when the researcher focuses on the ecological happenings (Annan, 2005).

Publicly available archival data from various databanks—KICD, KNBS, Kenya MoE, Transparency International, UNESCO, UNICEF, IMF, World Bank, WHO and publicly-available electronic information about Kenya from national media (i.e., *Daily Nation*, *The Standard*) and international e-media (i.e., *EduMonitor*, *Reuters*) —was used. In addition, social media platforms (e.g., Facebook, YouTube) and the researcher’s personal experiences (Ressa, 2009) were used to assess the Kenyan system of education in times of disaster. Finally, previous studies on the state of Kenya’s ICT (e.g., Njenga, 2018; Obiero et al., 2020) were reviewed. These multiple sources helped with triangulation of the data.

Guided by disability studies and using the NVivo software, the data was thematically coded to delineate the spaces learners with disabilities occupy in Kenya as the government fights the spread of the virus through multiple measures, including closing of schools. The keywords used

to retrieve information while coding included COVID-19, coronavirus, disability, special needs, education, government, and funding. These words helped to delineate relevant factors that impacted education of school-aged children with disabilities.

### **Barriers to education of learners with disabilities during COVID-19 pandemic**

Two major factors hinder education of children with disabilities in Kenya as the country deals with the COVID-19 pandemic: limited digital infrastructure and shortage of technically-trained teachers.

#### ***Inaccessible digital infrastructure***

Following the outbreak of COVID-19, the Kenyan government instituted preventive measures that included restrictions of movement of people within and outside the country, use of cashless transactions, prohibited the assembly of more than ten people, and required maintaining a distance of two meters apart and burial of the deceased within 24 hours. Essential institutions were required to provide soap, water, and hand sanitizers for users and to clean and disinfect their premises. The most necessary measure, but devastating on the lives of learners, was the closure of learning institutions on March 16, 2020. Following this decision, the central government issued a directive to county governments to designate 20 residential schools in each county as isolation health facilities—hospitals, testing centers, and quarantine centers (Waita & Njehia, 2020).

Closure of schools greatly limited the opportunities of learners with disabilities to receive proper education needed to bridge the gap between them and their nondisabled peers. Faced with the reality that school closure would lead to mass repeating of classes and the possibility of causing academic failures and school dropouts, the government-initiated distance learning in early April 2020 to mitigate against negative effects (KTN, 2020a, 2020b). This involved investing in digital infrastructure using part of the USD 739 million loan from the IMF (IMF, 2020). Local companies (e.g., Safaricom, Longhorn Publishers, Eneza Education, Viusasa) and international companies (e.g., Google) boosted internet coverage, particularly in remote rural parts of Kenya, where the majority of citizens and children live, by flying balloon transmitters that allow residents to access 4G internet capable of streaming video on YouTube and placing and receiving uninterrupted calls (Etherington, 2020; Reuters, 2020a; World Bank, n.d.). Improved digital and energy infrastructures allowed various individuals and agencies, local and international, to provide various lessons in different subjects (e.g., English, Kiswahili, drug abuse, geography) via media—television, radio, and online (e.g., YouTube). The Kenya Institute of Curriculum Development (KICD) started broadcasting lessons via radio, television, and the Kenya Education Cloud on weekdays targeting primary and secondary school students (BBC, 2020). Also, individuals and organizations, both local and international (e.g., *EduMonitor*), provided online learning opportunities via social media (e.g., YouTube, Facebook, WhatsApp) free of charge. Despite these initiatives to develop digital infrastructure and promote e-learning, the adoption of digital learning remains wanting in all levels of schooling (BBC, 2020; Reuters, 2020b), mostly because the digital infrastructure is inefficient and inaccessible to most families. While many Kenyan students have limited or no infrastructure (e.g., internet, electricity) and tools (e.g., computers) to participate in online learning (KTN, 2020a, 2020b, 2020f), the most affected are citizens with disabilities because they come from poverty-stricken households (*Daily Nation*, 2020a).

The less developed e-learning infrastructure is denying learners with disabilities education, predisposing them to health issues and pushing them further into oblivion in an education system that has long considered their schooling and community participation low priority. Children with disabilities are still left out of the schooling process (BBC, 2020; Njung'e, 2020) because they lack computers, internet, and electricity besides uncondusive home environment. Some families live in grass-thatched houses in the rural areas, or one-bedroom houses, or shacks in informal settlements in cities without these utilities (Daily Nation, 2013; Mureithi, 2020). Most e-learning happened in the public cybercafes, many inaccessible to learners with disabilities. Cybercafes are situated in trading centers far away from villages or homes and so learners need transportation and user fee that many families struggle to get (KTN, 2020a, 2020b, 2020f). Others are located on upper floors of buildings without elevators and ramps or in congested and noisy settings and, therefore, unsuitable for learners who are sensitive to certain stimulants (e.g., noise for children with autism), or those with mobility issues. Also, most computers are outdated and lack many requisite features, such as Microsoft Word, spell checkers, dictation applications, or webcam. Similarly, many cybercafes are operated by individuals with little experience in disability pedagogy. Cybercafes are unregulated and do not adhere to accessibility codes, primarily because the general public is not familiar with the regulations. Access to education is likely to worsen peri- and post-COVID-19 pandemic considering the social, economic, political, and infrastructural challenges students with disabilities already face (Daily Nation, 2013; Mureithi, 2020) and lack of reliable population data for planning.

Schools may remain shut for the rest of the 2020 academic year (*Daily Nation*, 2020b) following COVID-19 transmission trend (UNESCO, 2020). The government's response to a call for it to provide direction on when schools will reopen remains ambivalent. The government's ambivalent decision on July 6, 2020 to postpone schools until 2021 and subsequent communique to open schools in September 2020 or late 2020 after it has trained teachers in a Community Learning Program caused confusion for teachers and families (BBC, 2020; KTN, 2020c, 2020d, 2020e, 2020f). As reported by Oduor et al. (2020), the President rescinded the decision of the Education Response Committee and Ministry of Education to reopen schools in September 2020 on the account of children's safety. Also, many schools had not met the COVID-19 protocols of providing sinks and additional classes to help enforce social distancing. Besides, the government had neither disbursed USD 120 million capitation funds for running schools since March 2020, nor released to the public the structure of how the money would be used. Some schools are in a bad state after months of neglect—leaking roofs, broken doors and windows. Others have been vandalized during the lockdown or occupied by herders, therefore, they need refurbishment before classes can start.

Moreover, schools designated as health facilities are hazardous and unavailable for schooling (Waita & Njehia, 2020). Even if schools were to be reopened, they would need thorough decontamination before the students' return (KTN, 2020d). Additionally, COVID-19 is communally transmitted and schools are considered high-risk settings because of congregation of learners from different places. Although the government is cautiously easing restrictions on movement introduced in March 2020, public transportation remains restricted between counties known to have high COVID-19 cases. At the same time, the small number of passengers on

*matatus* and buses due to the rules of physical and social distancing make traveling expensive, difficult, and unaffordable to most families with children with disabilities, and the risks involved make it unappealing to passengers and proprietors of public service vehicles. These factors mean that about 18 million learners are kept at home. Unfortunately, children with disabilities are confined at home without learning opportunities, services, and resources (Wanzala, 2016). Because their families are poor and the educators are traumatized, the teachers have limited access to personal protective equipment (PPE), teaching resources and are unable to provide services to their learners efficiently. This challenge adds to children with disabilities' desperation, frustration, and abuses, which has overburdened families trying to eke out a living in a shrinking economy (KTN, 2020c, 2020d, 2020e, 2020f; Njung'e, 2020).

School closure caused logistical problems (Daily Nation, 2020b). The disruption of the 2020 academic calendar means that students in all learning institutions will have to repeat classes the following year. Already, the national summative examinations—Kenya Certificate of Primary Education (KCPE) and Kenya Certificate of Secondary Education (KCSE)—that were to begin in October 2020 have been postponed until 2021. Stakeholders welcomed this decision, considering the limited time for teachers and learners to cover the curriculum in the remainder of the 2020 academic year. Although the Kenya National Examinations Council (KNEC) manages the national examination, tests are printed in the United Kingdom (Oduor, 2020), which is equally affected by COVID-19 measures, including lockdown. Having students take the KCPE and KCSE in 2021 means there will be 1.2 million students in standard eight and 752,000 in form-1 in 2022 (Wanzala, 2020). These figures are creating a planning problem with the administration of the national examination and placement of students in form 1, as more than 438,000 spaces will be needed. The backlog is also worrying families and students as to whether they will have access to schools (KTN, 2020c, 2020d, 2020e, 2020f). Even learning in tertiary institutions is negatively impacted by the pandemic, since a few programs opened in September 2020 (Nyerere, 2020). Additionally, only those institutions that met the strict Ministry of Health safety guidelines were allowed to open.

### ***Technically-trained teacher shortages***

Data from the Teachers Service Commission (TSC), a government agency responsible for hiring of teachers, already shows an oversupply of unemployed teachers (TSC, n.d.). According to the TSC, a total of 317,010 teachers are employed by the government—216,517 in primary schools and 100,493 in secondary schools while over 400,000 are unemployed (TSC, n.d.; Wanzala, 2019). Most teachers do not have any computer skills since they have had limited exposure to online pedagogical practices and no capability to effectively provide distance learning. Moreover, most unemployed teachers have Primary Teacher Education (P1) status. What happens to them in the future is unclear, considering the government has introduced a new teacher curriculum to match the 2-6-3-3-3 structure introduced in 2017. In early 2020, the government ended the P1 and Early Childhood Development Education (ECDE) courses, and suspended teacher training for a year, while the Ministry of Education develops a new curriculum for the new diploma courses, tailored to meet the 2-6-3-3-3 education, which replaces the current 8-4-4 education system (Wanzala, 2020). The plan was to enable teacher training colleges (TTCs) to admit the first cohort of students seeking a diploma in education in 2021 and by which time the KICD will have developed the curriculum. The training will take three years to earn a diploma instead of the two-year certificate



course. The extended duration will allow teacher candidates to master the theory and work as interns before deployment to the schools. The plan was designed to cushion the current teacher shortages in primary schools across the country, but due to the effects of the COVID-19 pandemic, the 2020 locust invasion, and the flooding (Muhumuza, 2020), beginning the curriculum and training in September 2020 or early next year is not guaranteed. Moreover, of the 27 public TTCs in Kenya, only three offer diploma training—Kagumo, Lugari, and Kibabii (Wanzala, 2020). It is unclear how the remaining 24 colleges will either be resourced to support new training or how long it will take the government to absorb the newly-trained teachers.

The closure of schools to contain the spread of COVID-19 reduced the capacities of stakeholders—parents, teachers, administrators, and suppliers of school resources—in providing support for students with disabilities (KTN, 2020c, 2020d, 2020e). The spread of coronavirus has not only caused fear among students, families, and teachers, but also perpetuated COVID-19-related stigma, aggressions, and violence against the disability community (Waita & Njehia, 2020). Educators and families feel their concerns are not addressed by the government (KTN, 2020c, 2020d, 2020e, 2020f). Although children with disabilities already deal with structural barriers in schools, community deferment of learning is causing further hardship and psychological damage, leaving them behind in all realms of life.

### **Disaster management and recovery process**

This study sought to assess the impact of this pandemic on Basic Education of learners with disabilities and to support disaster preparedness, risk reduction and recovery programs, since education is key to disaster management (UNISDR, 2015). The study reveals that inadequate digital infrastructure and shortage of technically-trained teachers makes implementation of distance learning difficult and inaccessible to learners with disabilities, despite increased government investment in education and energy infrastructure (Moner-Girona et al., 2019), and the new digital infrastructure (KTN, 2020a, 2020b). While factors related to geography, infrastructure (e.g., roads), technology (e.g., computers), and utilities (e.g., internet, power, water, and transportation) have hindered efficient distance learning (KTN, 2020a, 2020b), the underlying problem that makes realization of digital learning difficult is the shortage of technically-trained teachers. A combination of these issues are predisposing children and youth with disabilities to academic failure, exacerbating the education divide between learners in the period of the COVID-19 pandemic, and condemning those with disabilities to a failed adult life.

### **Addressing inadequate digital infrastructure**

To achieve the SDG 4 on Quality Education, countries ought to invest in education programs as a means of ending poverty (B1G1 Business for Good, n.d.; UNESCO, 2020). Already, Kenya has committed to supporting the educational needs of children and youth with disabilities (Kiru, 2019; Oketch & Rolleston, 2007). This initiative has contributed to the implementation of free Basic Education (Mulinya & Orodho, 2015; Ngugi et al., 2015; Ohba & Malenya, 2020). Still, learners with disabilities are left behind by inaccessible education systems and insufficient infrastructure that existed even before the outbreak of COVID-19. School enrollment of learners with disabilities lags behind that of students without disabilities due to limited government investment in SNE (MoEST & VSO, 2014). Although there are more children with disabilities attending school than two decades ago, this gain might be eroded by the consequences of this pandemic. Already,

Kenyan children with disabilities are profoundly impacted by the COVID-19 pandemic, and the situation is becoming dire as school closures continue to disrupt their education. Some children with disabilities may experience long-term or permanent effects if recovery programs sideline them. As previously reported, disasters predispose children to crime, drug abuse, unwanted teenage pregnancies, academic failures, school dropouts, injuries, trauma, poverty, and even death (UNESCO Institute for Statistics, 2019; UNISDR, 2015; Winters et al., 2017). These factors would negatively affect transitions at all levels of schooling (e.g., home-to-nursery, primary-to-secondary schools, technical/trade schools or colleges to universities) and post-school outcomes, such as employment, pursuance of post-secondary education, and community participation. Furthermore, learning disruptions and negative consequences, for example, academic failures, are likely to aggravate conflict at home, deteriorate school-home partnerships, disrupt collaborations between teachers and other professionals, aggravate economic hardships and encourage corruption, and exacerbate biases against people with disabilities, which would eventually contribute to their lower quality of life (Danforth, 2014; Transparency International, 2020).

The realization of post-school outcomes depends on improved enrollment and graduation rates at primary and secondary schools, and transitioning to higher education. This is dependent on improving inclusion of learners with disabilities, which is determined by accessible infrastructure, digital learning, increased government funding of education and disability programs, increased purposeful research, disability advocacy, increased awareness of disability rights, and implementation of disability legislation (Chiwandire & Vincent, 2019). Unfortunately, the outbreak of COVID-19, has coincided with reduced government funding of learning institutions, making education unaffordable to children with disabilities, especially those from low-income families (Ohba & Malenya, 2020; Oluremi & Olubukola, 2013). Individuals with disabilities and without any formal education, have limited opportunities in the digital economy era. Thus, access to digital learning is critical for learners with disabilities, especially with the COVID-19 pandemic. However, this digital infrastructure remains inefficient and inaccessible to many households (Mutisya & Makokha, 2016; Wambaria, 2019) and, therefore, affects education of learners with disabilities, not to mention the shortage of teachers remains a barrier to implementation of SNE.

### **Addressing the shortage of technically-trained teachers**

Education quality is compromised by the inconsistent policies and practices that affect teachers. The rising population of learners, growing number of schools, and more diverse classes require the employment of highly qualified teachers (HQTs) to meet these needs. Training HQTs is key to addressing current teacher shortages and to respond to the increasing learner population. Kenya has seen increased enrollment of learners since the government introduced the free Basic Education (Kiru, 2019; Ngugi et al., 2015; Ohba & Malenya, 2020). Still, gaps in schooling and quality education persist in many under-resourced schools. Educational quality and access remain a challenge for children with disabilities who are often forgotten in the education planning process.

COVID-19 pandemic has revealed mismanagement of the teaching force in and out of the school structure. There are over 750,000 trained teachers and more than 30,000 enrolled in teacher preparation programs in various public and private TTC and universities (TSC, n.d.)—enough to significantly lower the teacher-pupil ratio. Therefore, it is ironic that a teacher shortage persists

when the labor market is saturated with unemployed teachers. According to 2019 Kenya population census data, the average teacher–student ratio in primary and secondary schools is 1:40, which is quite high in comparison to previous years (KNBS, 2019). The pupil–teacher ratios by total (based on headcount) in 2014, 2015, and 2016 were 26.30%, 29.55%, and 28.87%, respectively (UNESCO, n.d. -c). The percentage of qualified teachers was 82.32% in 2014 (UNESCO, n.d. -c). While many general education teachers support inclusive education and the placement of children with disabilities into community schools, previous studies show that few are pedagogically prepared to teach them, more so in under-sourced schools (Chikati et al., 2019; Gathumbi et al., 2015). Moreover, most teachers are not computer literate or pedagogically prepared to teach children with disabilities online or remotely. The effect of COVID-19 on schooling has exacerbated the problems with teaching, and most likely the percentage of qualified teachers in primary and secondary schools is lower, considering that many cannot conduct distance learning.

As it frequently happens, when infectious diseases hit a region (Chan, 2014; Heymann et al., 2015), it induces fear in people’s lives. COVID-19 has certainly heightened fear in many Kenyans’ lives, especially in schools with inadequate PPEs, and plans to protect teachers over the age of 58 from in-person teaching (if coronavirus persists) (MoE, 2020), exacerbates teacher shortages. This challenge is happening just now when more teachers are required to implement a split classroom schedule to facilitate physical and social distancing requirements. Because of increased enrollment of students in subsequent years, all learners will remain in the classes they were in pre-COVID-19. It is anticipated, therefore, that more students who repeat classes (e.g., a new batch for class 1 in 2021) will create further congestion that will require more teachers and resources. Besides, more teachers will be mandated to teach required subjects (i.e., mathematics, English, Kiswahili, biology, chemistry, physics, geography, history and government, and physical education) and optional subjects (e.g., business studies, agriculture, home science, Arabic, French, German, music, art and design, and computer studies). Initially, the MoE planned to offer online classes to current students, but have Class 8 and Form 4 candidates repeat classes in 2021. This would have led to a double intake in Form 1 in 2022, requiring more resources such as new classrooms and more teachers to teach more than 11 subjects (KICD, 2019).

The teacher shortage can further be attributed to mismanagement of the education sector by both local and global partners. Current teacher shortages can be traced to the teacher employment freeze initiated in the 1990s by the Structural Adjustment Programs sponsored by the World Bank and IMF (Barnes & Sheldon, 2010). It is also associated to teacher preparation curricula that did not mandate digital learning. While training HQTs is important for successful learning, the Kenyan government has dealt with education reactively rather than proactively. Seldom does the government develop transitional mechanisms or engage the public in the planning, development, and implementation of new education measures, even though education systems need smooth transitions to avoid hiccups that hurt children and the broader society. The top-down approach is seen as necessary due to the adversarial nature of governance and administration caused by the competing interests of individuals and communities that make implementation of worthy programs difficult. Nonetheless, solicitation of public opinion in education matters is vital in ensuring that the curricula addresses societal matters. Currently the

KICD is working on teacher preparation curriculum with the input of “experts” only. Unfortunately, mistakes, such as teaching for the test experienced in the 8-4-4 system, are likely to be repeated now that KICD is preparing the teacher curriculum without public input. As COVID-19 has shown, it is important for teacher preparation programs to factor in digital learning skills and for the government to involve families in decision making.

Paradoxically, the teaching sector suffers from both surplus and shortage of teachers. TSC already shows an oversupply of teachers. Unfortunately, there are 309,000 unemployed trained teachers, including those teaching in public and private schools across the country, but employed by the schools’ board of governors, working in informal sectors (e.g., hawking or running small farming businesses), and those seeking jobs (KNBS, 2019). Nonetheless, these challenges can be attributed to the frequent changes in the education system that implicitly keeps invalidating certificates of graduates making it hard for them to qualify for training and be hired. For instance, with the introduction of the new Basic Education Curriculum, only teachers with diploma will teach at primary school level. To qualify for diploma certificate training, a candidate must have a minimum aggregate KCSE grade C with similar score in the possible teaching subjects (TSC, n.d.). This abrupt change means that students interested in becoming teachers, but with a lower grade will not attend diploma colleges. Unfortunately, changes in education systems, though aimed at improving the quality of education, might adversely affect quality at all levels of learning when done too frequently and without consideration of unforeseen variables, such as pandemics. The public TTCs are scheduled to open in September 2020 or early in 2021; there should be a path for P1 certificate holders to transition to diploma, and their training should emphasize whole-child and inclusive education (Ohba & Malenya, 2020). This would ensure that teachers are prepared for all children, including those with disabilities, in a classroom that is a microcosm of the community. Even though previous data show the percentage of qualified teachers by total to be high (e.g., 82.32% in 2014; UNESCO, n.d. -c), current school closures and the shortage of teachers competent in distance learning point to a serious shortcoming in the teacher training curriculum.

In 2008, the Kenyan government launched Vision 2030 to spur economic growth and development to eradicate poverty (Kenya National Bureau of Statistics, n.d.; Mulinya & Orodho, 2015). To achieve Vision 2030’s goal, the government committed to modernizing TTCs in readiness for training teachers with a diploma for primary education who will implement the new 2017 curriculum. Currently, of the 27 public TTCs, only three offer diploma training (i.e., Kagumo, Kibabii, and Lugari). Since 309,000 unemployed trained teachers include primary 1 (P1) status teachers (TSC, n.d.), what will happen with them is unknown. The hurried change in the teacher training program never factored in the COVID-19 pandemic, the qualifications of the teacher trainers, or what the graduates of these colleges with P1 certificate status will do. It is important to have clear plans and resource allocation to facilitate the modernization of the other 24 colleges to support teacher training. Also needed is a clearly-defined government projection on when the newly-trained teachers can expect to be absorbed into employment. Unfortunately, most employed and unemployed teachers are ill-prepared pedagogically to conduct distance learning, which is necessary to offer education to millions of learners idling at home. Moreover, it is crucial that the curriculum being developed by KICD (2016) consider the variables that may affect the training of HQTs capable of working with all learners, including those with disabilities, in order to avoid a surplus of teachers unable to function in the 21<sup>st</sup> century structure. It is important that the curricula prepare teachers to be competent in online and remote teaching. They must develop

competency in operating computers and using various (digital) tools to carry out research soundly and use online materials appropriately to enrich learners' experiences (Crockett et al., 2019; Ludlow, 2001).

### **Investing in disaster preparedness and risk management and recovery education**

With the COVID-19 ravaging across Kenya and the eagerness of the government to contain it before it overwhelms the inadequate healthcare system, the question of when schools will reopen for learning remains indeterminate. This is causing unquantifiable academic, health, economic, and social impacts on children with disabilities and their families. Pandemics disrupt normal life, cause suffering and death, and break down the social order, which may contribute to economic recession (Chan, 2014; Heymann et al., 2015; UNISDR, 2015). According to the Global Education Monitoring Report Team, "There is a USD 148 billion annual financing gap in low- and lower-middle-income countries to achieve SDG 4 from now until 2030" (UNESCO, 2020, p. 1). Negative impact on the economy due to COVID-19 pandemic means limited resources and services for children with disabilities. For instance, two decades of underfunding of the Education Assessment Resource Centers, which are tasked with identification of students and placing them in appropriate programs, is likely to be extended. This will decrease disability services and increase students with disabilities' chances of academic failure and failed adult life. Uniqueness of COVID-19 and disruption of life has caused panic and negative attitude towards people with disabilities who are suspected to be vectors and forced to carry the stigma of the disease. Considering that over 90% of children with disabilities were not in school pre-COVID-19 (MoE, 2009; MoEST & VSO, 2014), some children may not resume school at all when this pandemic is over, causing harm that will reverberate for decades factoring that they will be unprepared for postsecondary education and career. Already, Kenya missed the 2015 UN SDGs and is unlikely to achieve SDG 4 of 2030 unless drastic measures are taken to provide education to all children (UNESCO, 2020).

Taming effects of COVID-19 and supporting recovery process require resources—human and material. In the event of disasters like this pandemic, various stakeholders must be involved in the management, prevention, cure, and recovery process (Hoffmann & Mutarak, 2017). Both individual and collective efforts are instrumental in the management of immediate and long-term effects, including rapid deployment of teams to provide resources and services and accurate information to reduce the spread of rumors that may aggravate insecurity (Chan, 2014; Heymann et al., 2015). Since learners with disabilities and their families and educators are often left out by the government, addressing their concerns rather than forcing them back to class can assuage societal fears. School community should be reassured about the government's support in the implementation of COVID-19 preventive guidelines before schools reopen in 2021.

Achievement of Vision 2030 now depends on how the government manages the COVID-19 pandemic. Investment in digital infrastructure should go hand in hand with training teachers on the use of digital learning tools so they can contribute to addressing education and pandemic problems (Wambaria, 2019). With USD 739 million from the IMF (IMF, 2020), the government has instituted pandemic mitigating measures to address the impact of school closure by investing in digital infrastructure and utilities and health among other realms. Therefore, the appropriate use of this money to address the needs of all citizens, including those with disabilities who are often

left behind by such programs, is crucial. One area to factor in is education, and this demands that the real problem affecting learners with disabilities and the teaching force be appropriately examined and effective measures taken. For now, there is the problem of the shortage of HQTs, while the labor market is saturated with trained teachers. A plethora of unemployed teachers with little experience in distance learning may not be beneficial to the education system now and, therefore, may not be on hand to participate in the empowerment of learners with disabilities. For this reason, there is need to retrain educators in online pedagogical practices and then ensure that they are absorbed into the teaching force. This shortfall has made access to services and online education difficult. Since most teachers are pedagogically ill-prepared to provide distance learning to students with disabilities, teacher education curricula should be structured to address these oversights.

Disasters tend to have greater negative impacts on individuals in low-income countries and those with a limited disposable income because they have insufficient resources to cope with the circumstances (Hoffmann & Muttarak, 2017). The most affected persons tend to be those with disabilities, yet they are never on the radar of program developers, response teams, or rescuers. Kenyan children and youth with disabilities have educationally been left behind before, during, and likely post- COVID-19 pandemic. Now that low income countries are projected to experience huge financial gaps (UNESCO, 2020), COVID-19 would likely be used by the government and communities to deny those with disabilities an education. However, it is essential to recognize that education is part of the recovery process (UNISDR, 2015). Therefore, the government and response teams must invest in people with disabilities to support a collective recovery process.

## CONCLUSION

Natural disasters are known to create humanitarian crises in Kenya for people with disabilities, compounding existing problems due to failed social, cultural, linguistic, economic, and political structures. Learners with disabilities are adversely affected by the COVID-19 pandemic that has magnified educational barriers as a result of disability biases and fears, issues of inaccessible infrastructure, poverty, and teacher shortages. Addressing the educational needs of learners with disabilities is vital to mitigating the effects of COVID-19 and engaging them in the recovery process critical for Kenya's achievement of Vision 2030 plan that aims to turn Kenya into a high-income country through poverty eradication. Although recovery programs require the involvement of all stakeholders in education, children with disabilities are often left out of the recovery process, especially with the current teacher shortages and inadequate digital infrastructure. This shortage has made it impossible for children with disabilities to access digital learning since many teachers are computer illiterate; however, this technical problem requires technical solutions. Over 300,000 employed and unemployed teachers, when well-trained and deployed, can lower the teacher–pupil ratio and empower them to teach both in-person and online. Therefore, there is a need for simultaneous training of teachers for in-person as well as distance teaching and learning in conjunction with investment in digital infrastructure.

The EFA initiatives are threatened by Kenya's closure of schools to control the spread of the coronavirus pandemic. Thus, education sector reforms demand a big-picture approach and constructive engagement with different stakeholders, majorly students with disabilities and their

families, if it is to succeed and positively impact society. It is counterproductive to ambush citizens with programs whose success depends on the input of every member of the society. Instead, government programs need to be planned to seamlessly fit and garner nationwide support, especially of key players—parents, students, tax payers, and donors. Addressing biases and infrastructural barriers is key to empowering learners with disabilities. Logistical problems emanating from COVID-19 and school closures require the government to invest in the digital infrastructure and training of HQTs competent in distance teaching.

### Limitation and future research

This study focused on the impact of limited digital infrastructure and the shortage of technically-trained teachers in the era of the COVID-19 pandemic on the schooling of children with disabilities. Critical was how preventive measures, including school closures, have impacted the education of children with disabilities. Future studies should examine the unemployment rate of special education and general education teachers and their competency in digital instruction to create genuine data that can inform policy formulation about teachers. In 2020, Kenya dealt with disasters—floods, droughts, and the locust invasion (Muhumuza, 2020)—besides civil disobedience, corruption, mismanagement of resources, uncertainties related to the economic situation, and biased cultural practices against children with disabilities and girls. Therefore, future studies should look at the impact of these factors to determine their influence on the schooling of children with disabilities in different regions and grade levels. Also, future studies might compare children with disabilities in special schools versus those in general classrooms. Finally, future studies should consider the relationship between children with disabilities in special schools and those in general classrooms relative to their special education and general education teachers. Despite its limitations, this study identifies investment in digital infrastructure and training of HQTs as paramount to addressing the effects of COVID-19 and the low school enrollment of children with disabilities.

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