Bridging or widening the gap? Assessing digitalisation's impact on inclusive education for vulnerable children in Africa

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Abstract: Technological solutions and digitalisation have the potential to improve access to education for vulnerable populations and support inclusivity. However, their effectiveness is contingent upon addressing underlying socio-economic challenges. Without tackling these issues, the impact remains negligible.

With over 97 million children out of school, Sub-Saharan Africa is at the hearth of a critical educational emergency, representing 38 percent of the global out-of-school population. Disadvantaged children, including those with disabilities and those living in rural areas, are particularly affected. For instance, children living in urban areas are nearly twice as likely to complete primary school compared to their rural counterparts. The proliferation of digital devices and mobile networks in Sub-Saharan Africa presents a transformative opportunity for improving educational access and quality. Digital education can help overcome barriers such as geographic remoteness and disruptive events by providing scalable solutions for both teaching and learning. Innovations in

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digital education have the potential to reach underserved populations, offering new ways to deliver educational content and support. Successful case studies from various regions demonstrate the promise of digital education to enhance learning outcomes and bridge gaps in educational provision.

However, the COVID-19 pandemic has revealed the critical importance of digital access in maintaining educational continuity. As schools closed worldwide, many children were left without any form of education, leading to potential long-term consequences for their educational and social development. The shift to remote learning exposed the digital divide, with many disadvantaged children lacking the necessary technology and internet connectivity to participate in learning, such as in South Africa. Disadvantaged children, including those with disabilities and refugees, who often rely on structured in-person education and support services, were disproportionately affected.

The shift to digital education has revealed deep-seated disparities in access to technology and internet connectivity. Children from rural areas, low-income families, and those with disabilities are particularly vulnerable to being left behind. Many across Africa lack access to essential devices such as smartphones, tablets, or computers, which are necessary for participating in online learning.

Additionally, unreliable internet access and insufficient digital literacy further exacerbate these challenges. Gender-specific barriers also exist, with girls often facing additional cultural and socio-economic obstacles that hinder their access to digital education in the continent.

Thus, while digital education holds promise, there is a risk that it could exacerbate existing educational inequalities if not implemented inclusively. The lack of basic access to digital technologies can reinforce and reproduce existing structural and educational disparities. For instance, students without access to devices or reliable internet may fall further behind their peers, deepening the educational divide between urban and rural areas and among different socio-economic groups.

Digital education for children with disabilities

Children with disabilities account for 15 percent of the world's out-of-school children, though this figure is likely an underestimation due to the inadequate data collection in many African countries. The educational gap between children with and without disabilities has been widening over the years. The rise of digital education during the COVID-19 pandemic has further exacerbated these inequalities. In Uganda, for example, many children with disabilities were left behind due to the unavailability of accessible devices and platforms not designed with their needs.

In fact, ‘assistive technologies’ play a crucial role in bridging the educational gap for children with special educational needs. Tools such as read-aloud software, augmentative and alternative communication applications, and writing supports are designed to help students with special needs engage actively in their learning. These technologies can transform educational experiences by making learning materials more

accessible and interactive. For instance, read-aloud software can help visually impaired students or those with reading difficulties by converting text to speech, while communication applications support students with speech impairments in expressing themselves more effectively.

Despite the potential of these technologies, many African countries face significant resource limitations that hinder their procurement and distribution. The World Health Organisation (WHO) reports that only 15 to 25 percent of individuals with disabilities in Africa have access to necessary assistive technologies. Barriers such as poverty, inadequate infrastructure, and insufficient training for service providers contribute to this limited access.

In Burkina Faso, a resource centre has taken an innovative approach to address some of these challenges. By using solar-powered audio devices, the centre supports students with visual impairments by allowing them to record lessons and access textbooks in audio format.

Urban/rural digital divide

International Telecommunication Union data reveals a pronounced difference in internet access between urban and rural areas in Africa. In urban settings, approximately 57 percent of the population enjoys internet connectivity, compared to a mere 23 percent in rural areas. This disparity is primarily attributed to inadequate infrastructure and limited technological resources in rural regions. Schools and households in these areas often lack modern equipment and reliable connectivity, which hinders their ability to access online educational resources and opportunities.

In Kenya, the situation is particularly pronounced. As of May 2022, only about 2 percent of primary school learners in rural regions had access to the internet, compared to 10.3 percent in urban areas. Such disparities in connectivity are compounded by various exclusion factors beyond the urban-rural divide. Gender, ethnic origin, socio-economic situation, language, and security are significant determinants of access to both education and technology.

Migrants and refugees' education

Migrants, particularly refugees, often face a range of socioeconomic challenges that impede their ability to leverage technology for educational advancement. Low levels of digital literacy, language barriers, and cultural differences can exacerbate these difficulties, making it challenging for migrants to fully benefit from available technological resources. As migrant children struggle to keep pace with their peers due to inadequate access to educational technologies, the repercussions are long-term. They may encounter ongoing difficulties in achieving educational and economic success, which perpetuates the cycle of inequality.

Initiatives like the United Nations High Commission for Refugees' Instant Network Schools programme illustrate the potential of technology to mitigate these challenges.

By introducing technology like tablets and digital kits to refugee camps, such as ‘Dadaab’ in Kenya, these programs have demonstrated significant improvements in access to education. Such tools provide students with a variety of educational resources, enriching their learning experiences and making information more accessible. Student testimonials reveal that visual presentations of information, facilitated by these digital tools, enhance comprehension compared to traditional teaching methods.

However, despite these promising outcomes, the impact of digital technologies remains uneven. Socioeconomic factors often limit access to these tools, with the most disadvantaged populations, including many refugees, frequently unable to afford or fully benefit from digital resources. As a result, while technology has the potential to enhance educational opportunities, its benefits are not universally realised, and significant barriers remain for those most in need.

Looking forward

In light of these considerations, governments and other stakeholders must develop policies that prioritise digital education while taking into account the socio-economic realities of vulnerable populations to ensure that all children, regardless of their background, have access to the necessary technology and training to realise their right to education. Such efforts would align with international treaties like the Kampala Convention on the Protection and Assistance of Internally Displaced Persons in Africa and the Protocol on the Rights of Persons with Disabilities in Africa, which stress the need for inclusive education. To achieve this, targeted support and resources must be provided to these vulnerable groups to enable their full participation in digital learning and ensure they have the tools and opportunities to engage in such learning environments.