EDTECH? NOT YET!

Accelerating the impact of Edtech in Africa

A POLICY PAPER

By Aretha Mare
and Nathalie Munyampenda*

Abstract

Most governments all over the world responded to the COVID-19 pandemic by placing social restrictions and banning public gatherings including schools. These restrictions affected 297 million learners in Africa. Governments, schools and parents had to resort to alternative forms of learning for the students to counter the disruptions to education. This accelerated the adoption of Edtech platforms such as Eneza Education in East Africa and Siyavula in South Africa. Best practices include internet service providers' (ISPs) zero rated educational platforms to enable access to more learners. However, most students, especially in rural and conflict areas, remain unreached by Edtech because of four major issues: poor basic and digital infrastructure, limited access to the internet, low digital proficiency levels of both learners and teachers, and very little locally curated content. Current efforts are not enough. There needs to be a systematic approach, as provided by the NEF Innovation Framework, to build a strong Edtech ecosystem that prioritizes access, local content and finances and scales the most innovative models.

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Key Takeaways

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- Educational technology adoption has been accelerated by the large number of students affected by the COVID-19 pandemic (297 million learners out of school in Africa alone).

- Most African countries are yet to meet the four essential prerequisites for successful Edtech propagation - basic and digital infrastructure, access to the internet, high digital proficiency levels of both learners and teachers, and locally curated content.

- Educational technologies, as they are, will further widen gender inequalities in the education sector unless specific countermeasures are adopted.

- Knowledge and gender gaps created during the pandemic will need to be assessed and responded to.

- Entrepreneurs and innovators in the Edtech sector in Africa still require more funding and support on research, content and product development to fully capitalize on the presenting growth opportunities in the sector.

- To further increase relevance, quality of learning and learning outcomes, Edtech platforms should be sufficiently localized taking into account the infrastructure and culture reality of local environments. Edutainment, content synchronization, parental empowerment and online safety are key elements for a quality e-learning environment.

- Education, as a public good, requires comprehensive, thoughtful and intentional investment of public funds towards this area and for scaling such critical innovations.

- Improving teaching and learning outcomes online requires a more systematic approach.

- Digital literacy frameworks must be embedded into curriculum planning and teacher training.

- Innovative partnerships and increased collaboration among stakeholders can help build a strong Edtech ecosystem that accelerates impact for learners.

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Introduction

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COVID-19 cases grew exponentially across the world during the first half of the year. This triggered government to enforce restrictions that included a ban on public gatherings, and schools were not spared. By May 2020, 192 governments had ordered the closure of schools, affecting 1.5 billion learners and 63 million teachers globally. In Africa alone, 297 million learners are out of school because of the pandemic, accelerating the turn to educational technology for solutions.

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What is Edtech?

Educational technology or Edtech has different definitions which vary according to context. Edtech is the application of technology in both learning and teaching and includes both hardware and software components. Today, Edtech encompasses mobile technologies; cloud computing, Artificial Intelligence, Virtual and Augmented Realities and Social Networking. The Edtech sector is expected to grow in value to about US$341 billion globally by 2025.

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A dose of reality

Picture credit: https://unsplash.com/@douglinstedt

Educational technologies aim to transform education by increasing the efficiency and effectiveness of learning, instruction and access. E-learning can counter teacher shortages, reaching areas that are not attractive for qualified teachers. Hence, the adoption of educational technologies by institutions has been increasing although at a slow pace.

In large part due to COVID-19, Edtech adoption has accelerated by 5-10 years with focus on facilitating remote learning and teaching. This trend has seen the use of Google Classroom grow by 400% globally. Kenya's Litemore's Zeraki learning app downloads increased to 100, 000 from a little under 1,000 within a month. In South Africa, Siyavula learning platform's usage also soared by 400% as a result of school closures during the COVID-19 pandemic.

But so far, in Africa, Edtech is yet to deliver on its promise. It favors those who already have access, marginalizing those who do not. Some quarters refer to Edtech as the "digital degradation of education" citing the wide gap that exists between the rhetoric from proponents to the reality on the ground.

There are some alternative SMS-based solutions that are successfully being scaled that try to address access, for example, the Eneza Education platform operating in Kenya, Ghana and Ivory Coast. However, all these solutions are barely scratching the surface; there is still so much to be done. Of the 297 million learners out of school in Africa, only 19 million are using e-learning platforms and of these, just 2 million have access to Edtech platforms.

This is not shocking if you consider the four essential prerequisites for successful Edtech propagation, which most African countries are yet to meet:

Availability of basic and digital infrastructure;

Access which speaks to affordability and equity issues;

Digital literacy skills with proficiency levels high enough for both teachers and learners to navigate the platforms and interact with the content, also including parents who have to assist younger learners; and,

Relevant online content preferably locally created and curated.

.....internet penetration is around **39.3%** in Africa against a global average of 62.9%.

In terms of basic and digital infrastructure, we focus mainly on electricity and the internet. Electricity access in Africa is low (40%) and the supply, where available, can be erratic.

As for internet, latest statistics show that internet penetration is around 39.3% in Africa against a global average of 62.9%. The reality, however, is quite varied across countries on the continent and within countries, for example between rural and urban areas. As for access, internet data is very expensive relative to income, costing about 8.76% of income in Africa - four times higher than in Asia and more than twice the cost in Latin America. For this reason, free e-learning programs are not entirely 'free'.

Access to devices is also very modest. The majority of Africans access the internet through mobile phones, but, smart-phones are relatively expensive with a penetration rate of 39% in Sub-Saharan Africa (SSA).   Affordability of a device for the poorest 20% in Sub-Saharan Africa is estimated to be around 375% of monthly income.That said South Africa's smartphone penetration rate was at an impressive 91.2% in 2019.

There are also other homegrown solutions we have observed to make data and devices more affordable. Mobile network operators and digital lifestyle companies on the continent, such as MTN in Nigeria, Cameroon, Rwanda, and Uganda and Tigo in Tanzania, are coming up with packages for their poorest customers. There are also "semi smart phones" like KaiOS which provide internet access like smartphones in Nigeria, Cameroon, Rwanda and Uganda and can cost as little as US$20.

Besides infrastructure gaps and access and affordability concerns, gender inequality cannot be ignored. During a pandemic (although the same can be argued in normal times), girls learning can get permanently disrupted. They are more vulnerable, economically and culturally, which further lowers their rate of access to the internet and devices. Studies conducted in the aftermath of the Ebola virus outbreak, showed that fewer girls than boys returned to school after the Ebola outbreak. In Sierra Leone, teenage pregnancy rose up in some parts of the country during that same period.

Educational technologies, as they are, will further widen gender inequalities in the education sector unless specific countermeasures are adopted.

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Edtech start-up scene in Africa

The growth opportunities in Edtech on the continent do provide hope. Sub-Saharan Africa (SSA) offers an enormous market base for these technologies, 60% of SSA is less than 25 years of age. Also, high adoption of mobile technologies sets Africa as a potential leading market for Edtech. As anticipated, the Edtech start-up scene in Africa, though nascent, is growing fast. Several initiatives in Edtech are sprouting across Africa, some of which are spread across multiple countries and regions. Innovators are coming up with solutions targeting learners and teachers at different levels. The tools and media used vary from advanced to simple technologies and from traditional to new media, all in a bid to circumvent longstanding barriers to technology-enabled education. To meet the demands of a 21st century workforce, e-learning interventions should be relevant to the demands of the Fourth Industrial Revolution (4IR) and, according to recent debates online, should shift from being school centered to becoming learner centered.

East Africa

Kenya and Rwanda have built the digital infrastructure allowing for the quick deployment of Edtech but the region lags behind on affordability, digital literacy and content. According to the 2018 GSMA Mobile Connectivity Index, no single East African countries is found among the top five countries on those three prerequisites. The same index, however, shows that Rwanda leads on infrastructure while Mauritius leads on the remaining three enablers.

Ubongo, a social enterprise, fills the local content gap with interactive, fun and engaging content targeted at young learners across Africa. Ubongo's viewership jumped from 13 million to 16.9 million in the first quarter this year because of the pandemic. The enterprise utilizes both traditional and new media to reach out to its target audience. Also on content, M-Shule is offering adaptive learning using Artificial Intelligence (AI) to primary school students across Africa through SMS.

In response to access issues, Eneza Education, already mentioned, offers free educational and revision materials that can be accessed through simple mobile phones using SMS and USSD. The platform has a reach of 380,000 active monthly users and has plans to expand to Rwanda and Ethiopia. As well in terms of government initiatives, the Kenyan government partnered with Google's parent company to provide free internet through Google's Loon balloons. In Rwanda, the Rwanda Education Board has a dedicated YouTube channel and website offered data-free to support off-school learning in partnership with all local telecoms. Again, the issue here becomes access to devices.

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Picture credit: unsplash.com

In Zambia, entrepreneurs designed a tablet (ZEduPad) for primary school learners to cover basic numeracy and literacy skills with approval from the country's education ministry. The tablet is loaded with content in eight different local languages and has preloaded courses and lesson plans for unqualified teachers in rural areas. Device access is critical for equitable access and learning.

West Africa and Sahel region

This region has several countries faring well on accessible and relevant local content but lags behind on digital infrastructure. Here, Edtech solutions that overcome the infrastructure barrier are likely to be more successful. Based out of Ghana, Chalkboard Education provides institutions a digital environment to share their curricula with learners through mobile devices. The platform can be accessed without internet. In Nigeria, Tuteria allows learners to connect and book verified local tutors for personalized tutorials in specific subject areas in a safe and secure manner tailored for their budget. Also in Nigeria, uLesson reduced the charges to access its platforms and has partnered with Multichoice for a broader reach. Again, the issue of access and affordability must be addressed.

North Africa

Although North African start-ups have comparatively higher opportunities for funding than their Sub-Saharan Africa counterparts, Edtech startups are still underfunded in that region. In 2018, 22% of all venture capital funds in the Middle East and North Africa (MENA) region went to Egyptian startups, but Edtech startups in the country received a small portion of those funds. Funding is a critical component for the success of Edtech in Africa. An Egyptian start-up, Nafham offers crowd sourced educational videos that first undergo review by professionals for secondary school learners. The company has operations in Egypt and several other countries in the MENA region. Notably, Egypt has the highest number of active users of MOOCs in Africa and is also renowned for hosting the largest digital library in the world. Still in the region, Sciencia from Tunisia is a STEM based startup which equips young learners with STEM and innovation skills through leisure activities where they interact with hardware and robotics kits among other materials.

Southern Africa

South Africa is in the top five countries across all the four prerequisites in Africa, but, the region will need to work more on digital literacy skills and device access. To increase STEM competencies in South Africa, Siyavula, offers online STEM subject tutorials and free downloadable textbooks and teaching guides. Also from South Africa, Instill Education is working to improve the proficiency of teachers as they transition to online and remote teaching in these COVID-19 times. The platform has a curated library of resources for educators and they also run webinars to equip teachers with the skills required to navigate e-learning. Syafunda, another Edtech company from South Africa, is offering digital libraries to learners through mobile technologies. These libraries then act as community network providers where users access Wi-Fi and download the content. The startup is breaking infrastructure barriers in townships and rural areas of South Africa and they recently received a US$145,000 investment to scale their product during the pandemic.

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Meeting entrepreneurs halfway

Despite inroads made in the African Edtech sector, entrepreneurs and innovators still require more funding and support on research, content and product development. Education, as a public good, requires comprehensive, thoughtful and intentional investment of public funds towards this area. The NEF Innovation Framework displays an excellent reference point for a more elaborate framing of the requirements for scaling such critical innovations.

The main message is that Edtech start-ups cannot do it alone. Government and private sector support is critical here. To meet these demands, governments should invest in digital infrastructure and review existing Edtechs to map models that work and the requirements to scale. Once offerings are deemed relevant and needed, governments should move ahead with funding, partnerships, the creation of content and digital literacy programs driven by these startups. Policymakers should consider issues of access from the beginning and create mechanisms to respond to this.

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Next steps:

What can be done?

Before we discuss what should be short and long term priorities, there needs to be emphasis on making a clear distinction between moving content and classes online and online learning driven by Edtech. Improving teaching and learning outcomes online requires a more systematic approach.

For now:

1. Improve access

Countries should adopt best practices including zero rating platforms, offering capped data packages to learners and teachers and using low-tech media. The development of requisite digital infrastructure enables access to affordable quality and meaningful connectivity. The issue of devices for vulnerable learners and for teachers more broadly needs to be addressed up front. Access to reliable electricity is equally as critical. All other infrastructure depends on this basic infrastructure. To prepare for future pandemics, governments should invest more in ensuring adequate supply in cities and rural areas by setting up micro grids in these communities. Green solutions already exist and governments should promote their use by, for example, removing import duties on solar materials or investing in local production.

2. Improve the quality of the e-learning environment

Current e-learning strategies fall short on engagement and interaction between learner and teacher. This is directly linked to adoption of sub-par platforms and poor digital literacy skills. Most of these platforms are not sufficiently localized, that is, they do not take into account the infrastructure and culture reality of the environments they are operating in. Also, performance is not being adequately tracked or managed, which further reduces the quality of the education being delivered on these platforms. Thus, digital literacy frameworks must be embedded in curriculum planning and teacher training.

Edutainment can be adopted for younger learners for improved information retention. Mechanisms should be put in place that enable the synchronization of content to avoid learners accessing content from everywhere. Parental empowerment and online safety are also key and should be addressed upfront.

3. Tackle inequality upfront

Uneven access to e-learning during this COVID-19 crisis is creating knowledge gaps between learners. As classes resume in the next few months, learners will not be at the same level. Policy makers and institutions should introduce mechanisms to assess and respond to this gap.

At the same time, continuity is key. Measures should be thought out and put in place early to make sure that online learning capacities are not lost or wasted.

In the long term

1. Enable co-creation of Edtech solutions that bring shared value

Given the need to accelerate access, content creation and digital literacy, no one government can do it all. Innovative partnerships and increased collaboration among stakeholders can help build a strong Edtech ecosystem that accelerates impact for learners. Governments, the private sector including internet service providers

(ISPs), Edtech startups, development partners, education specialists, parents and students should be part of a framework to build a relevant and affordable Edtech industry. For example, Enlaces Network in Chile involves different players including the responsible ministry, schools, universities, teachers, parents and students. These collaborations have enabled them to set up infrastructure in schools and scale across the country. Exigently, partnerships that were put in place during Covid-19 should be made permanent, especially around zero rating of education content/sites like we saw in Rwanda, South Africa, Kenya, etc. The approaches adopted should be flexible enough to allow for experimentation.

2. Adopt blended learning at all levels of education

Blended learning, combining in person and online learning, not only enhances the quality of the engagement between learner and teacher but also allows a gradual adjustment to an online learning environment. A blend of digital and traditional media could work in the beginning.

Although relatively prevalent in higher education, this form of education should be introduced at earlier stages to allow learners to develop an intricate understanding and use of technologies. Society is already blended to some extent with technologies in interaction and conduct and this should also be mirrored in educational contexts. A blended environment relieves pressure from the teacher allowing them to concentrate on learning outcomes. Blended learning for younger learners is mostly found in private schools, for example, Nova Pioneer in South Africa and Kenya and Sparks in South Africa. We need to make sure innovative solutions like this are also adopted in the public education system.

3. Educational institutions should rethink business models

Schools and colleges had to speed up the switch to online teaching and learning under pressure. This is not the ideal situation but COVID-19 provides an opportunity for schools, especially higher education institutions, to rethink their business models. They cannot continue to rely on face to face classroom lectures alone, but should strategize on how they can continue to offer the same quality of educational experiences to their learners through digital means without going bankrupt. This will require them to reorient their policies and value proposition to meet the demands of learner driven digitization, working closely with local innovators.

Picture credit: https://unsplash.com/@nesabymakers

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Summary

At the moment, most students, especially rural students, remain unreached by Edtech because of four major issues: poor basic and digital infrastructure, limited access to the internet, low digital proficiency levels of both learners and teachers, and very little locally curated content.

We have seen some best practices with internet service providers' (ISPs) zero rated educational platforms to enable access to more learners. However, this is not enough. There needs to be a systematic approach, as provided by the NEF Innovation Framework, to build a strong Edtech ecosystem that prioritizes access, local content and finances and scales the most innovative models.

As we have seen with COVID-19, time will not wait.

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Aretha Mare is a Research Officer at the Next Einstein Forum and
***Nathalie Munyampenda** is the outgoing Managing Director of the Next Einstein Forum,
now CEO at Kepler.

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Katugume Johnson

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