Clear evidence, better decisions, more learning.

CASE STUDY

EdTech and the COVID-19 response: A case study of Kenya

Date **November 2020**

Authors **Moses Ngware**, African Population and Health Research Center
Vollan Ochieng, African Population and Health Research Center

#EdTechHub @GlobalEdTechHub edtechhub.org

Creative Commons Attribution 4.0 International https://creativecommons.org/licenses/by/4.0/

About this document

Recommended citation Ngware, M., & Ochieng, V. (2020). *EdTech and the COVID-19 response: A case study of Kenya. Case study.* EdTech Hub. https://edtechhub.org.

Licence Creative Commons Attribution 4.0 International https://creativecommons.org/licenses/by/4.0/.

You — dear readers — are free to share (copy and redistribute the material in any medium or format) and adapt (remix, transform, and build upon the material) for any purpose, even commercially. You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

Notes You can contact EdTech Hub here: https://edtechhub.org/hello/.

Version 1

Acknowledgments This study was conducted by researchers from the African Population and Health Research Center (APHRC) Education and Youth Empowerment Unit. It would not have been possible without the buy-in and support of the mentioned institutions/offices. In particular, we would like to thank Maurice Mutisya and Francis Kiroro for supporting access to secondary datasets. Our gratitude also goes to the education key informants for their time and voluntary participation in the study. We thank the organisers of several webinars that discussed the impacts of the COVID-19 pandemic on education, and related interventions by education stakeholders, from which this case study benefited in terms of insights and information. We also thank the reviewers of this case study for their constructive inputs and engagement in fine-tuning it to meet high standards. APHRC would like to thank the EdTech Hub for its financial support, and its staff, particularly Moizza Binat Sarwar, for her support. We are also grateful to Sachin Gathani for peer review and Sophie Gillespie for copy-editing and proofreading, and to Susan Nicolai for the final review and signing off. The views presented in this case study remain those of the authors and are not necessarily shared by those mentioned.

Contents

Abbreviations and acronyms 04

Key messages 05

1 Introduction 06

2 Key decisions during COVID-19 and timelines 07

3 EdTech and its capabilities 09

4 Use of technology among stakeholders 10

5 Access to EdTech among marginalised and vulnerable students 11

- The status of access to learning among marginalised and vulnerable students during COVID-19 11
- Children with disabilities 11
- How do learners access EdTech (if any), and if excluded from EdTech, why? 12
- Why are learners excluded from EdTech? 12

6 Political economy factors and policy decisions 14

7 Education system recovery and the future of EdTech in Kenya 15

8 Conclusions and programming suggestions 16

- Conclusions 16
- Programming suggestions to education stakeholders 16

References 18

Abbreviations and acronyms

EdTech	Education Technology
KICD	Kenya Institute of Curriculum Development
KNEC	Kenya National Examination Council

Key messages

- The main education technologies (EdTech) rolled out in Kenya include: 1) radio, 2) television, 3) Kenya Education Clouds, (4) YouTube, and (5) web-based apps such as WhatsApp, Google Classrooms and Zoom, among others. YouTube and Zoom, and other internet-based solutions like Google Classrooms are being used at a smaller scale.
- Three main factors influence the use of EdTech: 1) infrastructure (unreliable electricity supply), 2) the high cost of internet data bundles, and 3) digital literacy levels among teachers and users.
- Before the onset of COVID-19, Kenya already displayed inequality in access to education, mainly due to poverty, geographical location and community lifestyles. Overall, some 6.1 million primary and secondary school children are at risk of not learning during school closures. About 41% of these students are spread across 19 of the 47 counties in Kenya that are described as marginalised areas.
- Over 942,000 marginalised and vulnerable students come from nine counties with the lowest prevalence (27.2%) of phone ownership by individuals. In these areas, computer/laptop/tablet ownership is as low as 3.6%.
- Radio is the most accessible digital tool for learning during school closures, and the government responded by scaling up the time allocated for radio broadcasting of lessons, from 4.5 hours to 8 hours. However, the prevalence rate of radios varies across counties.
- Overall, about 90,000 children with visual or hearing impairments are at risk of missing out on distance learning solutions, either due to the solutions not being inclusive and/or limitations within the households to accessing learning solutions.

1 Introduction

In Kenya, the first COVID-19 case was reported on 13th March 2020 (Tyce, 2020). This led to a number of education policy decisions as well as decisions aimed at containing the spread of the disease (Kenya Human Rights Commission, 2020). In this study we synthesise existing evidence and examine stakeholder responses to the use of distance learning solutions during the pandemic and beyond. We also discuss the need to ensure that a cross-cutting focus on marginalised and vulnerable children is incorporated into policy responses. The overall methodology was a desk review to synthesise existing evidence, secondary data analysis to understand the reach and use, and limited qualitative primary data to understand the perceptions of stakeholders.

2 Key decisions during COVID-19 and timelines

In Kenya, the rise in cases corresponded closely to closures of learning institutions and the rapid move to distance learning. As the timeline below shows, more nuanced responses to education focused on training teachers, as well as planning for school re-opening, which occurred a few months after the initial response.

- 28th February 2020: Formation of the National Emergency Response Committee on COVID-19.
- 16th March 2020: Closure of all learning institutions as well as restrictions on all forms of public gatherings (Parsitau & Jepkemei, 2020).
- 23rd March 2020: Continuation of off-campus learning through various platforms, including television, local radio and internet.
- 8th April 2020: Nationwide curfew from 7pm to 5am, followed by a decision on the cessation of movement into and out of the Nairobi metropolitan area, Kilifi and Kwale counties (Ogila, 2020).
- April 2020: Proposal to train 150,000 head teachers (and/or their deputies) and teachers on interactive remote learning approaches.
- April 2020: Establishment of partnerships with faith-based, privately owned and community television providers to air teaching and learning programmes to learners and other education stakeholders.
- 12th May 2020: Launch of the COVID-19 National Education Response Committee.
- 7th July 2020: Announcement of school re-opening dates as January 2021, and encouragement of stakeholders to keep learners engaged through distance learning solutions.
- 30th July 2020: Teachers employed by parents in government schools will henceforth get a salary from the government. They will begin teaching in community classrooms in their neighbourhoods.

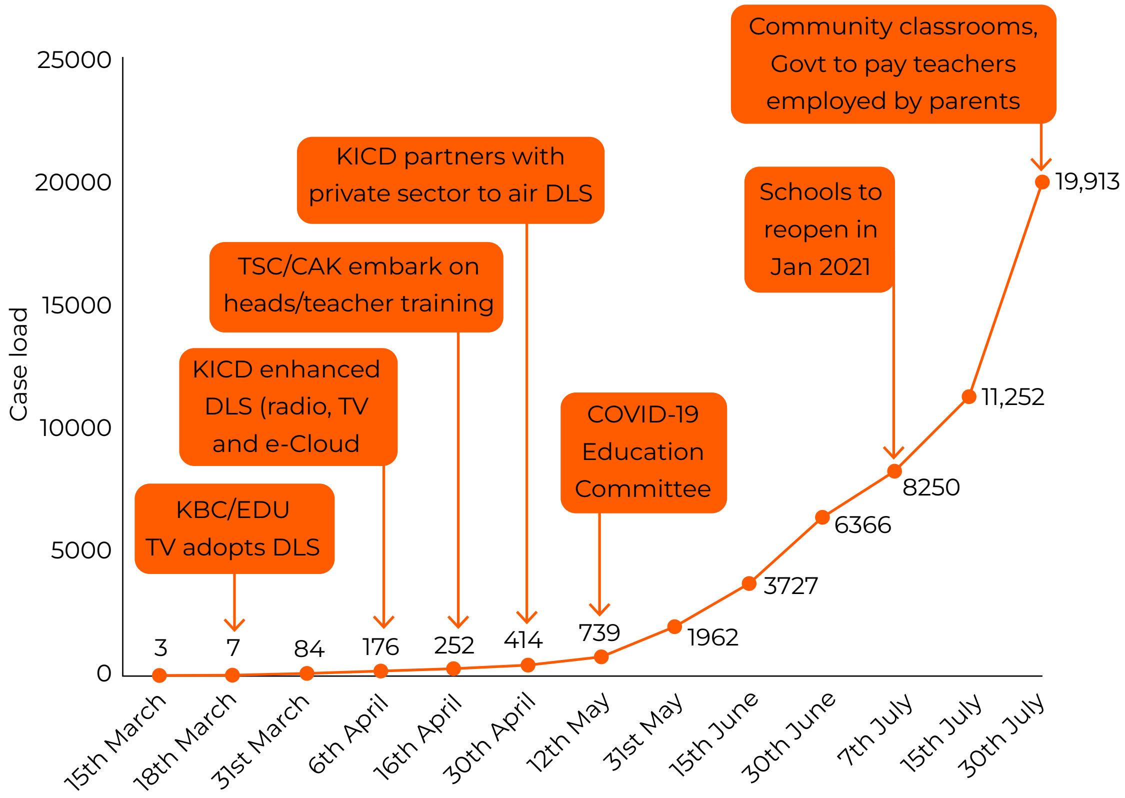

Figure 1

Timeline of the education policy response to COVID-19. (Source: www.health.go.ke/press-releases/)

3 EdTech and its capabilities

The main EdTech technologies rolled out in Kenya are: 1) radio, 2) television, 3) Kenya Education Clouds, 4) YouTube, and 5) web-based apps such as WhatsApp, Google Classroom and Zoom, among others.

Radio: The main radio broadcast is made by the government-owned radio station Taifa. Radio lessons take 20 minutes, and run from Monday to Friday. The programme covers all primary and secondary school grades (Otieno & Taddese, 2020). Broadcasting hours for educational programmes have been increased from the previous 4.5 hours to 8 hours per day to provide coverage of learning time similar to that of normal school hours. Local private radio stations loop in some of the educational content and air it live and/or as recorded material.

Edu Channel TV: This is owned by the government through the Kenya Institute of Curriculum Development (KICD) and airs educational content. The programme runs from 8am to 8.10pm every day of the week. Lessons for core subjects such as maths, sciences and languages, for both primary and secondary schools, take a maximum of 30 minutes, while set books (story book narration) for secondary takes 10 minutes. Private television stations loop in some of the educational content and air it live and/or as recorded material.

Kenya Education Cloud: This is owned by the government through KICD and has support from private publishers. The e-Cloud platform offers comprehensive coverage of core subjects in all levels (early education, upper primary and secondary) and can be accessed through smartphones, YouTube, computers and internet-enabled televisions. It aims to reach 15 million learners. Free downloads are possible through a partnership between KICD and private publishers.

Mobile phones (smartphones): KICD, together with private partners, provides learning materials that can be accessed through mobile phones, such as PDF documents that can then be shared via messaging and WhatsApp to increase use and reach.

Other distance learning: There are several other distance solutions that are being used in the private sector, including Eneza Education, a phone-based platform where learners and teachers access educational programmes, including learner–teacher interactions, with an estimated scale/reach of over 5 million learners (according to the service providers). Others include Ubongo, which provides local education content for early childhood learners, pre-primary and primary school learners, and e-Elimu, a mobile app learning platform through which the government plans to train 150,000 head teachers, their deputies and teachers. Google and Zoom classes are also being used.

4 Use of technology among stakeholders

It is evident that educators and education stakeholders are using distance learning solutions to continue with learning. Use of EdTech is influenced by three main factors: infrastructure; cost; and digital literacy levels among users.

Infrastructure: Unreliable electricity connections limit utilisation, as most if not all of the technologies rely on electrical power to function, yet a significant number of learners come from homes in rural, remote and marginalised areas with no electricity coverage (Kenya National Bureau of Statistics, 2020a).

Cost: There are cost implications, especially for learners from poor households who may need to prioritise purchasing meals over purchasing internet data bundles for learning. Based on child poverty indices (Kenya National Bureau of Statistics, 2017) in Kenya, about 6.1 million primary and secondary school learners experience food poverty, of which 2.5 million come from the poorest nine counties.

Digital literacy: There is a need to strengthen the capacity of teachers and educators on how to navigate digital technology platforms for efficient learning and teaching. While teachers are willing and able to teach, levels of digital literacy hinder effective involvement (Charo, 2020).

5 Access to EdTech among marginalised and vulnerable students

Before the onset of COVID-19, there was already inequality in access to education, mainly due to poverty, geographical location and community lifestyles. For example, in poor urban slums, girls' net enrolment in secondary school is below 50% (Ministry of Education, 2016). Among the nomadic communities in Kenya, overall net enrolment ranges between 27% and 77%, compared to the national average of 91.1% (Ministry of Education, 2016).

The status of access to learning among marginalised and vulnerable students during COVID-19

Overall, about 6.1 million primary and secondary school children are at risk of not learning during school closures. In the poorest 40% of counties in Kenya, there are 2.5 million primary and secondary school children (1.3 million boys and 1.2 million girls) who face the greatest risk of not learning due to limited access to distance learning solutions at the household level (Kenya National Bureau of Statistics, 2020a). This is supported by a 2020 survey on the socio-economic impact of COVID-19 in Kenya which showed that, nationally, learning was not taking place in 24.6% of households (Kenya National Bureau of Statistics, 2020b). Counties in the upper quintiles are well-off economically but there are pockets of child poverty. A case in point is Nairobi county, which has a low child poverty index of 27.6%, but over 60% of its population live in low-resourced informal settlements (Kenya National Bureau of Statistics, 2020b). Girls are more affected because they usually have to respond to household chores in the absence of a female adult at home (Sperling & Winthrop, 2015; Ilahi, 2001).

Over 942,000 marginalised and vulnerable students come from nine counties with the lowest (27.2%) prevalence of phone ownership by individuals. In these areas, computer/laptop/tablet ownership is as low as 3.6%. At household level in these nine counties, radio, television and internet access are at 38.8%, 13.4% and 5.1%, respectively. These low rates of access to digital devices make it challenging for learners to access learning materials when away from school, especially as households prioritise providing food over purchasing/acquiring 'gadgets' that aid education.

Children with disabilities

Overall, about 90,000 children with visual or hearing impairment are at risk of missing out on distance learning solutions, either due to the solutions not being inclusive and/or limitations within households to accessing learning solutions. Most of these children require assistive technology, for example group hearing aids and radio frequency systems for the hearing impaired. They also need personnel who offer sign language interpretation. For the visually impaired, assistive technology such as braille is critical. The Edu Channel TV and its YouTube broadcasts are accompanied by sign language interpretation, which enables hearing-impaired children to access these tools. These students can thus usually follow the curriculum for non-special education and participate in learning while away from school.

For students with visual impairment, who have to rely on auditory learning, the July 2020 radio programme does not have a scheduled lesson for children with special needs. Equally, the Kenya Education Cloud online materials focus on early years, primary and secondary schools for children who do not require special education. Hence visually impaired learners with special educational needs are disadvantaged by current adaptations in distance learning.

How do learners access EdTech (if any), and if excluded from EdTech, why?

Phone ownership by individuals in counties in the bottom two poverty quintiles ranges between 27% and 45%, while ownership of computer/laptop/tablets by individuals aged from 3 years is very low — below 5% and 10% for the 5th and 4th quintiles, respectively. Even for counties with a low prevalence of child poverty, the proportion of individuals with these devices remains low, making them less suitable for accessing digital content for the majority of learners. By implication, any learning officially delivered through these devices will exacerbate inequalities of opportunities to learn among primary and secondary school learners, and should be discouraged until alternative channels are able to reach those with no access to these devices.

About 57% of households in Kenya own a radio. This makes it the most accessible digital tool for learning during school closures. This influenced the government, through KICD, to scale up the time allocated for radio broadcasting of lessons from 4.5 to 8 hours. However, the prevalence rate of radios varies across counties, with a low of about 39% (13% for television) in the counties at the bottom quintile, to about 59% (56% for television) for the counties with the lowest child poverty index. This shows that the counties with more households experiencing insufficient food (the key measure of child poverty), are the same ones with low rates of radio and television ownership. Given that radio and television are the main official channels of delivering learning during school closures, learners from a majority of households in such counties are not participating in learning.

KICD uses Edu Channel TV to broadcast school lesson content. School television programmes, such as Edu Channel TV, are accompanied by a sign language interpreter, enhancing inclusivity for hearing impaired children. But household ownership of internet access is low, at below 18% overall. The internet works well with internet-protocol televisions, (among other devices), but these also have low prevalence rates in households. The low access to digital infrastructure is of concern, as it creates an inequality of opportunity to access digital content, including school lessons.

Why are learners excluded from EdTech?

- **Nature of the EdTech device:** Children with a disability experience a double constraint in that some distance learning solutions, such as radio in the case of hearing-impaired children, exclude them, and the low prevalence of EdTech at the household level reduces their chance of being reached by alternative solutions.
- **Belonging to a household or county with inadequate resources:** Households with low income spend less on education-related items compared to other household needs, such as food. They are more sensitive to income changes with respect to resources allocated for education (Huebler & Mcgee, 2019; Bayar & İlhan, 2016).
- **Gender roles that disadvantage girls:** Households respond to financial shocks by varying education resources allocated to girls (Syomwene & Kindiki, 2015; Björkman-Nyqvist, 2013; Girls Education in Kenya, No date), implying that girls' value is seen in terms of household chores rather than education.
- **Disability predisposes children to learning exclusion:** EdTech solutions, including computers, tablets and mobile phones lack the basic and necessary accessibility

features to make them usable for children with disabilities (McClain-Nhlapo, 2020).

- **National infrastructure for technology:** In Kenya, infrastructure for communication technology, for instance fibre cable, is still expanding and has not reached most rural households.
- **Cost of service that goes with EdTech:** Usage-related costs inhibit utilisation among poor households.

6 Political economy factors and policy decisions

At the national level, different power dynamics are driven by the need to sustain the economy, respond to public concerns, and allow more access to digital infrastructure, among other needs at the household level. The government had the opportunity to use the 2019 Population and Housing Census, as well as the results of a rapid study on the socioeconomic implications of COVID-19 in Kenya, which examined whether learning was taking place at the household level (Kenya Institute of Special Education, 2018). This informed the decision of the Ministry of Education to focus on and scale up radio and television broadcasting of lessons, as it had the widest reach within the population.

At the sectoral level, staggering the closures over the course of a week allowed other stakeholders, such as school managers, parents and head teacher associations, to prepare to close institutions and receive children at home. This reflected formal and/or informal communications between the presidency and education stakeholders, including the Ministry of Education.

The Ministry of Education formed a COVID-19 National Education Response Committee to explore the possibility of schools re-opening. This allowed wider consultation among education stakeholders and the collation of evidence, as the committee received presentations and opinions from the general public, civil society organisations and research/higher education institutions. Key stakeholders, such as primary and secondary school head associations, parent associations, and private school associations were represented on the committee. The committee acted as a source of evidence, as research institutions and civil society organisations made presentations to it. The committee's report has not been made public.

7 Education system recovery and the future of EdTech in Kenya

In an effort to recover lost teaching and learning time, the government, through the Ministry of Education, has decided that once schools re-open in January 2021, all learners will remain in their current grades/levels to enable them to cover lost learning.

In an effort to sustain and guarantee the future of distance learning solutions, the government plans to adopt and/or strengthen the following measures (Ministry of Education, 2020; Otieno & Taddese, 2020):

1. Establish more virtual learning centres in under-served counties, such as those in the bottom quintile on the child poverty index.
2. Enhance the Kenya Education Cloud to contain more learning materials that can be downloaded to address various learning needs.
3. Enhance cyber safety to safeguard children. This will ensure that even as learners learn through EdTech, parents, teachers and learners do not have to worry about learners being exposed to cybercrime or cyber bullies.
4. Improve digital infrastructure. For example, acquire essential information and communication technology equipment to support the recording of lessons to advance the e-cloud.
5. Scale up EdTech by increasing distance learning resources and co-creating innovative lesson delivery, including resources for learners with special needs.

8 Conclusions and programming suggestions

As much as EdTech has always been used as a distance learning solution in Kenya, it has been scaled up to close the learning gap created by impromptu school closures as a result of the COVID-19 pandemic. Education stakeholders in Kenya, led by the Ministry of Education, have made tremendous efforts to provide distance learning solutions, with radio, television, Kenya Education Cloud, YouTube and other internet-based solutions such as Google Classroom leading the field. However, about 6.1 million marginalised and vulnerable students, including girls, are at risk of not being able to access the distance learning solutions. Of these, 2.5 million come from nine counties at the bottom of the child poverty index.

Contrary to what is widely believed to be high phone and internet access in Kenya (especially using measures such as sim card registration), we find low access to digital devices based on ownership at both individual and household levels: phone ownership by individuals is below 50%; computer/laptop/tablet ownership by individuals is below 12%; and internet services at household level is below 20%. This does not rule out sharing of technology among individuals and/or households. Low access to digital devices is inhibiting access to learning during school closures. Poverty could be a determining factor for reach and use of EdTech learning devices during school closures.

Some children with disabilities are benefiting from the sign language interpretation that accompanies television broadcasting, though the majority remain under-served by EdTech distance learning solutions due to the inappropriateness of the majority of EdTech to their special learning needs.

Programming suggestions to education stakeholders

- Establish a robust and all-inclusive monitoring and evaluation system for distance learning solutions to enhance effective and efficient feedback transmission on the effectiveness of distance learning solutions, with a view to widening reach and use, especially among marginalised and vulnerable learners.
- Consider setting up cluster teaching and learning centres, equipped with adequate infrastructure for distance learning solutions, such as free internet, television, computers, for example, for learners in poor, remote and marginalised areas to access teaching and learning offered through such media. These clusters could serve as learning resource centres for students, and could also be used for continued school feeding programmes now and in future, to serve both in- and out-of-school children.
- Internet service providers, in partnership with government agencies, should craft mechanisms for providing subsidised internet bundles to teachers to enable them to play active roles in distance learning solutions, especially when accessing and using EdTech distance learning solutions such as the Kenya Education Cloud. This should go hand-in-hand with strategies for making electronic devices used for distance learning affordable to poor households (smartphones and tablets).
- The government should comprehensively actualise its digital programme by scaling up internet to all schools in the country, similar to its successful scaling up of electricity coverage and connectivity to public schools.

- The Ministry of Education, through its agencies like KICD, the Teachers' Service Commission and the Kenya National Examination Council, should offer tailor-made psychosocial support services to learners, parents and teachers, especially to address possible stresses that could have been created by anxiety and/or anticipation of being in school soon, proceeding to the next grade, and/or sitting their national examinations. This will help maintain focus on learning.

References

Bayar, A.A., & İlhan, B.Y. (2016). Determinants of household education expenditures: Do poor spend less on education? *Topics in Middle Eastern and North African Economies*, *18*, 83–111.

Björkman-Nyqvist, M. (2013). Income shocks and gender gaps in education: Evidence from Uganda. *Journal of Development Economics*, *105*, 237–253.

Charo, R.K. (2020). *Stakeholder engagement plan (SEP) — Kenya GPE COVID-19 learning continuity in basic education project — P174059 (English).* World Bank Group. http://documents.worldbank.org/curated/en/446931592941221907/Stakeholder-Engagement-Plan-SEP-KENYA-GPE-COVID-19-LEARNING-CONTINUITY-IN-BASIC-EDUCATION-PROJECT-P174059.

Girls' Education in Kenya. (No date). The Borgen Project Blogs. https://borgenproject.org/girls-education-in-kenya/.

Huebler, F., & Mcgee, K. (2019). *Family spending on education: A new guidebook on measurement*. World Bank Blogs. https://blogs.worldbank.org/opendata/family-spending-education-new-guidebook-measurement.

Ilahi, N. (2001). *Children's work and schooling: Does gender matter? Evidence from the Peru LSMS*. The World Bank. http://documents1.worldbank.org/curated/en/925581468774891046/122522322_20041117161051/additional/multi0page.pdf.

Kenya Human Rights Commission — KHRC. (2020). *Responses to the COVID-19 situation in Kenya*. KHRC. www.khrc.or.ke/2015-03-04-10-37-01/press-releases/711-reponses-to-the-covid-19-situation-in-kenya.html.

Kenya Institute of Special Education — KISE (2018). *National survey on children with Disabilities and special needs in education*. KISE. www.researchgate.net/publication/339830401_National_survey_on_children_with_disabilities_and_special_needs_in_education_2018.

Kenya National Bureau of Statistics. (2020a). *2019 population and housing census: Volume III. Distribution of population by age, sex and administrative units*. www.knbs.or.ke/?page_id=3142.

Kenya National Bureau of Statistics. (2020b). *Survey on socio economic impact of COVID-19 on households report*. www.knbs.or.ke/?wpdmpro=survey-report-on-socio-economic-impact-of-covid-19-on-households.

Kenya National Bureau of Statistics. (2017). *Child poverty in Kenya: A multidimensional approach*. www.unicef.org/esaro/2017-UNICEF-Kenya-Child-Poverty.pdf.

McClain-Nhlapo, C. (2020). *An inclusive response to COVID-19: Education for children with disabilities*. GPE Blogs. www.globalpartnership.org/blog/inclusive-response-covid-19-education-children-disabilities.

Ministry of Education. (2020). *Kenya GPE COVID-19 learning continuity in basic education: Stakeholder engagement plan (SEP)*. Ministry of Education. www.education.go.ke/images/GPE_PRIEDE/Stakeholder_Engagement_Plan_SEP_KENYA_GPE_COVID_19_LEARNING_CONTINUITY_IN_BASIC_EDUCATION_PROJECT_P174059_Disclose.pdf.

Ministry of Education. (2016). *2016 basic education statistical booklet*. www.education.go.ke/images/REPORTS/Basic-Education-Statistical-Booklet---2016.pdf.

Ogila, J. (2020, June 6). *Nairobi, Mombasa, Kilifi and Kwale counties declared COVID-19 hotspots, put on partial lockdown*. www.standardmedia.co.ke/article/2001367102/uhuru-declares-partial-lockdown-of-four-counties.

Otieno, J., & Taddese, A. (2020). EdTech in Kenya: A rapid scan. EdTech Hub country scan. DOI: 10.5281/zenodo.3909977. https://docs.edtechhub.org/lib/CQ5E3ESF.

Parsitau, D.S. and Jepkemei, E. (2020). *How school closures during COVID-19 further marginalise vulnerable children in Kenya*. https://www.brookings.edu/blog/education-plus-development/2020/05/06/how-school-closures-during-covid-19-further-marginalize-vulnerable-children-in-kenya/.

Sperling, G.B., & Winthrop, R. (2015). *What works in girls' education: Evidence for the world's best investment*. Brookings Institution Press. www.brookings.edu/wp-content/uploads/2016/07/What-Works-in-Girls-Educationlowres.pdf.

Syomwene, A., & Kindiki, J.N. (2015). *Women education and economic development in Kenya: Implications for curriculum development and implementation processes. Journal of Education and Practice*, 6(15), 38–43.

Tyce, M. (2020). Kenya's response to COVID-19. www.effective-states.org/kenyas-response-to-covid-19/.

EdTech Hub

Clear evidence, better decisions, more learning.

Publication typesetting by User Design,
Illustration and Typesetting
www.userdesignillustrationandtypesetting.com

#EdTechHub @GlobalEdTechHub edtechhub.org

Creative Commons Attribution 4.0 International https://creativecommons.org/licenses/by/4.0/