


Unintended Consequences of Coronavirus on Education Participation in Budalangi Sub-County of Busia, Kenya

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Abstract

This study looked at the unintended effects of coronavirus infections on students' engagement in school in the Kenyan region of Budalangi. Floods frequently occur in the Budalangi region. The impact of child labor on student engagement was examined in this study. Due to the financial crisis and the terrible circumstances they experienced while living at the camps, the majority of students were unable to access learning materials online since their parents could not afford to support their children's education. Notably, the majority of the pupils residing in the camps helped their parents with manual labor to make a living, including gathering sand, laboring in rice fields, and fishing along the shores of the River Nzoia and Lake Victoria. The studies also determined how teen pregnancies and young marriages affect student participation. These activities made it difficult for them to study. Poor return rates and low engagement rates in education are hence symptoms of the issue. This is a result of the community setup's poor social and economic ties. This is consistent with what the UNICEF Executive Director said about how COVID-19 has affected students' participation in school. He emphasized that COVID-19 had a detrimental effect on students' attendance.

Keywords: COVID-19, disaster, e-learning, floods, participation

Introduction

The COVID-19 pandemic has interconnected the entire world. This has led to an evolution of risks that have affected people at various levels. The risks have spread to various sectors, including education. However, the consequences of the pandemic hit the vulnerable hard. The education sector is not exceptional. Learning was interrupted. However, the educational community, through innovation, maintained learning continuity during this period. The crisis exposed learners to many inequalities in education systems across the world. Children had to rely on their own resources to continue learning remotely through the internet, television, or radio. Besides, teachers adapted new pedagogical concepts and modes of delivery for the teaching of online teaching. Privileged students were supported by their parents and continued to learn virtually. In contrast, those students from disadvantaged backgrounds were shut out during the lock-down period. Disadvantaged students could not manage to access broadband and computers, essential for online education. The lock-downs that were meant for the mitigation of COVID-19 interfered with conventional schooling.

UNICEF (2021) reported that school closures due to COVID-19 surges left 32 million children (roughly 40 %) in Southern and Eastern Africa out of school. However, alternative ways had to be found to ensure learning continuity during this period. Online learning had to be adapted. Despite this, UNESCO (2020) revealed that 89% of students in Africa south of the Sahara do not access computers and the internet in their homes. This was an indication that learners from disadvantaged backgrounds could not attend online classes. Learning loss leads to skill loss. In light of this,

UNICEF (2021) noted that the most vulnerable children who were unable to access remote learning were at an increased risk of never returning to the classroom. For instance, the majority of the learners from the Budalangi constituency whose families had been displaced by floodwaters were forced to seek refuge in the internally displaced camps. The camps were overcrowded, a situation which made it extremely difficult for the students to have ample time to study. Many of them could not access learning through the internet as their parents were economically constrained and also had stressful situations while living at the camps.

Theoretical Construct

Consequentialism theory influenced this study. Consequentialism is an ethical theory that uses the effects of something to determine whether or not it is right. The theory assumes that normative characteristics are solely determined by their implications. Because we cannot change the past, worrying about it is no more constructive than crying over spilled milk. This historically significant and still popular notion represents the basic sense that what is best or right is whatever makes the world better in the future. This generic method can be used at various levels to specify various normative characteristics of various kinds of things, but the most well-known example is probably consequentialism, which claims that whether an act is morally right or not is determined by its consequences.

Impact of COVID-19 on Education Participation

Following the outbreak of the coronavirus disease in December 2019, the virus spread very fast across the globe. It has impacted

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Acknowledgment: The study is empirical and original. The study was presented as a conference paper during the 2022 CIES Conference. **Authors' Contributions:** The three Authors equally participated in the study. **Conflict of Interest:** There is no conflict of interest. **Funding Source:** No external source of funding. Authors sacrificed their savings to fund the study.

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social and economic life in ways that are a paradigm shift. COVID-19 lockdown and protocols were imposed. The closure led to more than 290 million students being locked out of physical classroom environments (UNESCO, 2020). This led to the adoption of virtual learning. However, UNESCO (2020) noted that there was a lack of preparedness for the adoption of virtual learning. This implies that school administrators, teachers, students, and parents were not equipped for a shift to online teaching and learning. The question of preparedness is crucial. Unique skills were necessary for educators and parents to enable a smooth transition from face-to-face mode to virtual mode. Lack of preparedness affected all school levels. Despite lock-downs being lifted in most countries, education systems face major challenges. Classrooms are inadequate (Imbova *et al.*, 2018; Mackatiani, 2017; Mackatiani *et al.*, 2017; Mackatiani *et al.*, 2020). Besides, classrooms are not designed for the one to two meters of physical distance recommended by WHO as one of the mitigation measures to curb the spread of the virus. Remote learning is likely to continue as the virus continues to spread. However, as observed by Mackatiani (2017); Mackatiani *et al.* (2018), teaching approaches in Kenya are teacher-centered. Countries should, therefore, provide the necessary tools for the learning achievement of learners. The required tools include internet devices and emergency training for teachers.

COVID-19 Mitigation Measures

The World Health Organization devised strategies to combat the COVID-19 pandemic. As a result, educational institutions were forced to close. UNESCO (2020) proposed that throughout the COVID-19 term, distance learning platforms with open educational applications be used. The WHO guidelines for social distance, sanitation, and face masks were approved by Kenya's Ministry of Health (MoH, 2020). Furthermore, all educational institutions were closed. Digital learning platforms were used to address the issue of school closures. National media houses were to be used to provide education to children. Educational programming was to be broadcast on television and radio stations. Despite this, teachers lacked the necessary competencies to implement e-learning (Mackatiani & Likoko, 2022).

The Kenya Institute of Curriculum Development mobilized teaching and resources for learners to access. It provided lessons through radio. Kenya's Ministry of Education is sufficiently advised on the way forward as far as education in the COVID-19 era is concerned. To save the academic year 2020, the government issued an order that students in form four, class eight, and grade four resume classes. Other levels of learning re-opened in January 2021. The schools were re-opened, and learners and teachers had to equip themselves with boldness and face it. The proper COVID-19 health protocols such as handwashing, social distancing, and wearing of masks were to be observed. Teachers were at the forefront to ensure that protocols were observed. However, according to Mackatiani *et al.* (2017), physical facilities and water points are inadequate in Kenyan schools. The school administration provided sanitizers and water points for hand washing. Marginalized and vulnerable children found it difficult to cope with the new situation. School learning gaps have increased. Children from disadvantaged backgrounds were excluded from online education. They could not access the internet or reliable electricity. Also, parents from poor backgrounds could not meet the school-related expenses on learning materials and daily bundles.

Socio-Economic Consequential Issues of COVID-19

The spread of COVID-19 has had a high human cost, and the costs are expected to rise further. This has resulted in significant trade disruptions, causing financial conditions in many countries to tighten. In spite of this, millions of people in Sub-Saharan Africa have been pushed into extreme poverty. The vast majority of these individuals are children. The majority of them are dealing with food insecurity. More than 50 million children did not have access to daily meals by April 2020. This implied that children were unable to attend school due to food insecurity. Despite sustained socio-economic growth, Kenya, like any other Sub-Saharan country, has faced poverty, inequality, and economic vulnerability due to internal and external forces. According to the World Bank

Group (2020), Kenya's economic growth averaged 5.7 % in 2019, but due to the COVID-19 pandemic, real GDP growth slowed to 1.2 % in 2020. This group is expected to be disadvantaged. The poor economic status had an impact on education participation. Mackatiani *et al.* (2022) noted parental socio-economic status influences girls' drop-out rates in secondary schools. Also, teenage pregnancies and early marriages affect the enrollment of girls in secondary schools in Kenya (KNBS, 2014).

Budalangi Sub-County is vulnerable to flooding. Kenya's government has designated Budalangi as a hardship area. Flooding exacerbated the situation. Flooding compounded with the COVID-19 situation made matters worse. The floods displaced over 3,000 families, forcing them to seek refuge in schools. Schools have been converted into displaced person camps. In addition, schools have been closed due to the COVID-19 pandemic. Many partners working in the region who supported the residents and the county in response to the crisis were concerned about the food and sanitation situation in the camps. This was also in the midst of fears of COVID-19 transmission due to the difficulty in practicing social distancing and the lack of access to masks and handwashing in the situation.

Statement of the Problem

With the outbreak of the COVID-19 pandemic, Kenya received WHO recognition for its COVID-19 status reporting. Kenya is applauded for her daily updates of descriptive statistics of the disease leading to information flow that has allowed adequate planning and decision-making in education systems. Lessons learned during the COVID-19 pandemic led to the sustainable development of education. The education system infused the lessons as part of on-learning through the KICD. TV stations and national radio stations offered online lessons. However, there are challenges that came up as a result of COVID-19. There is minimal presence of information technology in primary and secondary schools. A few secondary schools are equipped with information and communications technology (ICT) equipment. Also, it was doubt-able whether children from disadvantaged backgrounds benefit from online classes. Besides, the government reported high drop-out rates of students after the lock-down period. Therefore, this study investigated unintended consequences that arose as a result of COVID-19.

Significance of the Study

It is anticipated that this study would be significant as the study's findings may help formulate education policies and legal frameworks on education participation in Kenya and Sub-Saharan Africa. The education stakeholders would also understand and appreciate e-learning as a basic model for promoting participation in education curricula. The study is also significant to comparative and international education as it provides data on the relevance of e-learning in education participation.

Objectives

1. To establish the influence of COVID-19 on education participation.
2. To assess Socio-economic consequential issues of COVID-19 on Education Participation.
3. To examine COVID-19 mitigation measures on education participation.

Methodology

The undertaken study adopted an exploratory approach (Given, 2008). An exploratory approach is appropriate for investigating new phenomena, such as the effects of COVID-19, as it investigates a problem that is not yet clearly defined. It aims at contributing to a better understanding of the existing problem. However, the approach cannot provide conclusive results. Hence, the researchers generated some general ideas on unintended consequences. The investigators used the research as a means of identifying relevant issues that emerged due to the

pandemic. They further explored the phenomena under investigation at the preliminary stages. Exploratory research is, therefore, most appropriate for this study. The study targeted 37 primary schools and 7 secondary schools in the Budalangi sub-county. From this target, 14 primary schools were purposively sampled. A census sample for the 7 secondary schools was adopted. The sample comprised of 70 primary school teachers, 56 secondary school teachers, 14 primary school head teachers, 7 secondary school head teachers and 4 education officers. The study followed a convenience sampling technique. As such, participants were selected based on ease of access and perceived applicability of the views. The data were mainly generated through online, virtual methods. Therefore, questionnaires and interviews were virtually administered.

Results and Discussion

This study assessed the unintended consequences of COVID-19 education participation. The study was guided by the following objectives: To establish the influence of COVID-19 on education participation, to examine COVID-19 mitigation measures on education participation, and to assess consequential socio-economic issues of COVID-19 on education participation. The study sought views from the education officers, head teachers, and teachers relating to the influence of unintended consequences of COVID-19 on education participation. Their perceptions were captured in Table 1.

Table 1

Perceptions of Head Teachers, Teachers Education and Officers on Influence of COVID-19

Attendance	Primary schools						Secondary schools					
	Headteachers		Teachers		Education officers		Headteachers		Teachers		Education officers	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Positive	0	0	10	14.3	0	0	0	0	8	14.3	2	50
Negative	14	100	60	85.7	4	100	7	100	48	85.7	2	50
Total	14	100	70	100	4	100	7	100	56	100	4	100

The data contained in Table 1 indicated that no head teachers in primary schools indicated that COVID-19 positively impacted Education participation. However, no head teachers in secondary schools showed that COVID-19 positively impacted education. Also, 14.3 % of teachers in primary schools indicated that COVID-19 had a positive influence on Education participation. Also, another 14.3 % of the teachers in secondary schools revealed that COVID-19 positively impacted education. Besides, 50 % of education officers indicated that COVID-19 positively influenced Education participation. Also, 50 % of education officers indicated that students in secondary schools were positively influenced by COVID-19.

Further findings from Table 1 revealed that 100 % of the head teachers in both primary and secondary schools indicated that COVID-19 negatively influenced education participation. Another

85.7 % of teachers from both primary and secondary schools indicated that COVID-19 negatively influenced education participation. Also, 50 % of education officers indicated that COVID-19 had a negative influence on education participation in both primary and secondary schools. Overall, all the respondents noted that COVID-19 negatively influenced Education participation. This implied that onsite learning had been interrupted. However, there was a positive influence on education participation by switching to virtual learning. This was in concurrence with UNESCO (2020), which noted that though virtual learning was adopted, there was a lack of preparedness.

The study also assessed the extent to which COVID-19 impacted education participation. To determine the extent, on a Likert scale of one to five. Views were sought from respondents. Their perceptions were captured in Table 2.

Table 2

Perceptions of Head Teachers, Teachers Education and Officers on the extent to which COVID-19 Impacted

Likert scale rating	Primary schools						Secondary schools					
	Headteachers		Teachers		Education officers		Headteachers		Teachers		Education officers	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Very high(5)	14	0	70	100	4	100	7	100	56	100	4	100
High(4)	0	0	0	0	0	0	0	0	0	0	0	0
Moderate(3)	0	0	0	0	0	0	0	0	0	0	0	0
Low(2)	0	0	0	0	0	0	0	0	0	0	0	0
Very low(1)	0	0	0	0	0	0	0	0	0	0	0	0
Total	14	100	70	100	4	100	7	100	56	100	4	100

Concerning data contained in Table 2, 100 % of head teachers in both primary and secondary schools indicated that COVID-19 highly impacted education participation. However, no head teachers in either primary or secondary schools indicated that COVID-19 had a moderate, low, or very low impact on Education participation. Besides, 100 % of teachers in both primary and secondary schools indicated that COVID-19 highly impacted Education participation. None of the teachers in both primary and secondary schools revealed that the COVID-19 impact was either moderate, low, or very low. Besides, 100 % of education officers indicated that COVID-19 impacts on education participation were very high. None of the education officers indicated that the impact

of COVID-19 was either high, moderate, low, or very low. Overall, all the respondents noted that COVID-19 had influenced education participation to a very great extent. The findings were consistent with UNESCO (2020), which indicated that the closure of schools led to more than 290 million students being locked out of physical classroom environments. This implied that onsite learning had been interrupted. Therefore, there was a need to address participatory issues of education by adopting e-learning.

The study further sought to examine the challenges of COVID-19 on education participation. To determine mitigation measures, the study sought views from the head teachers, teachers, and education officers. Their perceptions were captured in Table 3.

Table 3*Perceptions of Head Teachers, Teachers Education and Officers on Challenges of COVID-19*

Cause	Primary schools						Secondary schools					
	Headteachers		Teachers		Education officers		Headteachers		Teachers		Education officers	
	N	%	N	%	N	%	N	%	N	%	N	%
Connectivity	4	28	30	42.8	2	50	3	42.9	24	42.8	2	50
Cost of brand width	4	28	20	28.6	2	50	3	42.9	16	28.6	0	0
Infrastructure	3	22	10	14.3	0	0	1	14.2	8	14.3	0	0
Technical support	3	22	10	14.3	0	0	0	0	8	14.3	2	50
Total	14	100	70	100	4	100	7	100	56	100	4	100

Table 3, 28 % of head teachers in primary schools and 42.9 % of head teachers in secondary schools indicated that connectivity was a challenge in accessing virtual learning. Another 42.8 % of the teachers in both primary and secondary schools showed that COVID-19 connectivity was a challenge in accessing e-learning. However, 50 % of education officers revealed that connectivity was very crucial. 28 % of head teachers in primary schools and 42.9 % of head teachers from secondary schools indicated the cost of bandwidth was the main challenge. Besides, 28.6 % of teachers in both primary and secondary schools indicated that the cost of bandwidth was a challenge. However, 50 % of education officers indicated that the cost of bandwidth was a challenge in primary schools and none indicated that it was a challenge in secondary schools. 22 % of head teachers in primary schools and 14.2 % of head teachers from secondary schools indicated that infrastructure and equipment were the main challenges. Besides, 14.3 % of teachers in both primary and secondary schools indicated that infrastructure and equipment were challenges. Also, 50 % of education officers indicated that technical support was a challenge in primary schools and none indicated that it was a challenge in secondary schools. However, none of the education

officers indicated that infrastructure and equipment were challenges in both primary and secondary schools. Also, findings from Table 3 revealed that 22 % of head teachers in primary indicated that technical support was the main challenge. However, none of the head teachers from secondary schools indicated that technical support was a challenge. Besides, 14.3 % of teachers in both primary and secondary schools indicated that technical support was a challenge. Also, 50 % of education officers indicated that technical support was a challenge in secondary schools and none indicated that it was a challenge in primary schools. Overall, connectivity, cost of bandwidth, infrastructure and technical support were the main challenges facing education during the COVID-19 era. This was consistent with Mackatiani and Likoko (2022), who noted that teachers lacked the necessary competencies to implement e-learning. The challenges facing virtual learning were to be redressed by the Kenyan government.

The study further sought to assess the socio-economic consequential issues of COVID-19 on education participation. To determine the socio-economic consequential issues of COVID-19, the study sought views from the Education officers, head teachers and teachers. Their perceptions are reflected in Table 4.

Table 4*Perceptions of Head Teachers, Teachers Education and Officers on Socio-economic Consequential Issues of COVID-19*

Issue	Primary schools						Secondary schools					
	Headteachers		Teachers		Education officers		Headteachers		Teachers		Education officers	
	N	%	N	%	N	%	N	%	N	%	N	%
Child labor	12	85.7	50	71.4	3	75	4	57.1	36	64.3	2	50
Teenage pregnancy/Early marriage	2	14.3	20	28.6	1	25	3	42.9	16	35.7	2	50
Total	14	100	70	100	4	100	7	100	56	100	4	100

Table 4, 85.7 % of head teachers in primary schools and 57.1 % of head teachers from secondary schools indicated the cost of child labor was the main socio-economic consequential issue among learners. Besides, 71.4 % of teachers in primary and 64.3 % of teachers in secondary schools indicated that child labor was a consequential socio-economic issue among learners. However, 75 % of education officers indicated that child labor was a challenge in primary schools and 50 % indicated that it was an issue in secondary schools. Further findings that 14.3 % of head teachers in primary schools and 42.9 % of head teachers from secondary schools indicated that teenage pregnancy/early marriages were a socio-economic issue among learners. Besides, 28.6 % of teachers in primary schools and 35.7 % of teachers in secondary schools indicated that teenage pregnancy/early marriages were an issue in

schools. Also, 25 % of education officers indicated teenage pregnancy was an issue in primary schools. At the same time, 50 % of the education officers indicated that it was an issue in secondary schools.

Overall, child labor and teenage pregnancy/early marriage were significant during the COVID-19 era. They greatly influenced education participation. This was as consistent with the World Bank Group (2020), which noted that Kenya's economic growth slowed to 1.2 % in 2020 due to the COVID-19 pandemic. This was an implication child had to venture into economic and social activities that contributed to child labor and teenage pregnancies to earn a living

The study further sought to investigate whether floods had an influence on education participation. Responses from respondents are indicated in Table 5.

Table 5*Perceptions of Head Teachers, Teachers Education and Officers on Impact of Floods*

Responses	Primary schools						Secondary schools					
	Headteachers		Teachers		Education officers		Headteachers		Teachers		Education officers	
	N	%	N	%	N	%	N	%	N	%	N	%
Positive	0	0	0	0	0	0	0	0	0	0	0	0
Negative	14	100	70	100	4	100	7	100	56	100	4	100
Total	14	100	70	100	4	100	7	100	56	100	4	100

Table 5, 100% of head teachers in both primary and secondary schools indicated that besides COVID-19, floods impacted negatively impacted education participation. Besides, 100% of teachers in both primary and secondary schools noted that floods had a negative impact on education participation. Also, 100% of education officers noted that floods negatively impacted learners both in primary and secondary schools. However, none of the respondents indicated that floods positively influenced education participation during the COVID-19 era. Overall, besides COVID-19, floods negatively impacted education participation. This is inconsistent with UNICEF (2021), which noted that most vulnerable children were at an increased risk of never returning to the classroom.

Major Findings

The study's findings revealed that the Coronavirus pandemic has negatively impacted education participation. It was further revealed that socio-economic activities had a negative impact on education participation. The results also revealed that floods negatively contributed to education participation. Besides, the study revealed that connectivity, cost of bandwidth, infrastructure and technical support were challenges in education participation. Generally, the findings revealed that e-learning was crucial in mitigating negative aspects of education participation.

Conclusion

The study concluded that the Coronavirus pandemic has negatively impacted education participation. The study also concluded that socio-economic issues negatively impact education participation. Floods negatively contributed to education participation. It was also concluded that child labor and teenage pregnancies are education participation's consequential effects. Also, the connectivity, cost of bandwidth, infrastructure and technical support impact education participation in education. It was also concluded that the gender of learners poses threats to involvement in education participation. It was concluded that e-learning was crucial in mitigating negative aspects of education participation.

Recommendation

It was recommended that adequate capitation be allocated to schools to redress the problem of infrastructure and equipment. The study also recommended that communal moribund cultures that hinder participation in education be abandoned. The study suggested that e-learning be adopted to promote participation in education. It was also indicated that the government of Kenya constructs more dykes to control flooding. The study further recommended an amendment to the legal framework to address the issue of cash transfers for social protection.

References

- Given, L. M. (2008). *The SAGE encyclopedia of qualitative research methods*. SAGE Publications. <https://doi.org/10.4135/9781412963909>
- Imbovah, M. A., Mackatiani, C. I., Getange, K. N., & Bogonko, S. (2018). Students' completion rates: Implications for Teaching and Learning Resources in Secondary schools in Kenya. *Journal of Education and Practice*, 9(24), 38-43.
- KNBS (2014). *Kenya demographic and health survey 2014*. Government Printer. <https://dhsprogram.com/pubs/pdf/fr308/fr308.pdf>
- Mackatiani, C. I. (2017). Influence of physical facilities on quality primary education in Kenya in post UPE and EFA era. *European Journal of Educational Studies*, 3(5), 822-840. <http://dx.doi.org/10.46827/ejes.v0i0.743>
- Mackatiani, C. I., & Likoko, S. N. (2022). Coronavirus Era: Implications for massive open online courses in basic education institutions in Kenya. *London Journal of Research in Humanities and Social Sciences*, 22(2), pp. 1-18.
- Mackatiani, C. I., Ariemba, A. N., & Ngware, J. W. (2020). African response to quality education: Comparative perspectives on quality primary education in Kenya. *European Journal of educational studies*, 6(11), 313-323. <http://dx.doi.org/10.46827/ejes.v0i0.2846>
- Mackatiani, C. I., Joseph, M. N., & Komo, G. D. (2017). Quality primary education in Kenya: Implications of teachers' characteristics. *European Journal of Education Studies*, 3(8), 635-650. <http://dx.doi.org/10.46827/ejes.v0i0.967>
- Mackatiani, C. I., Joseph, M. N., & Komo, G. D. (2018). Learning achievement: Illusions of teacher-centered approaches in primary schools in Kenya. *Journal of Education and Practice*, 9(18), 46-55.
- Mackatiani, C. I., Navin, I. M., & Owino, M. A. (2022). Transition in education: Perspectives on girls' drop-out rates in secondary schools in Kenya. *London Journal of Research in Humanities and Social Sciences*, 22(1), 41-51.
- Ministry of Health. (MoH) (2020). *Interim guidelines on the management of COVID-19 in Kenya*. Government Printer. https://www.health.go.ke/wp-content/uploads/2020/06/Updated-Case-Management-Guidelines-26_03_20-1.pdf
- UNICEF. (2021). Effectiveness of digital learning solutions to improve educational outcomes: A review of the evidence. <https://www.unicef.org/documents/effectiveness-digital-learning-solutions-improve-educational-outcomes>
- World Bank Group. (2020). *Kenya Economic Update, November 2020: Navigating the Pandemic*. World Bank. <https://openknowledge.worldbank.org/handle/10986/34819>

Received: 28 June 2022

Revised: 07 August 2022

Accepted: 14 August 2022