



COVID-19: The Effect of Lockdown on Children's Remote Learning Experience – Parents' Perspective

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Author's contribution

Author DCB designed the study, wrote the protocol and first draft of the manuscript, managed the literature searches and analyses of the study, read and approved the final manuscript.

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ABSTRACT

Aims: This online survey was done to explore parents' perspectives on education of their children affected by the stay-at-home measures still ongoing in the country.

Study Design: Cross-sectional study design.

Place and Duration of Study: Sample: All six Geopolitical Zones in Nigeria, from May 9 to June 8, 2020 among parents residing in Nigeria.

Methodology: A non-probability sampling technique was used in the recruitment of participants. The study questionnaire on a Google Doc Form was administered through WhatsApp instant messaging. Chi-square was used to test for differences, and statistical significance was set at p-value less than 0.05.

Results: The 260 respondents who participated in the survey, had a median age of 38 years (IQR=9); including 40.4% (105) males, and 64.2% (167) with tertiary education, 77.7% (202) possess a computer device, 93.2% (234) have internet services and 55.0% (143) spend between N5,000 – N9,999 (13.1 – 26.2 USD) per month for internet services. Only 35.4% (92) had their children participate in the ongoing radio/TV learning sessions, 46.1% (120) educate their children

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with their computer devices at home, however, 40.0% (104) preferred an online based method of homeschooling. Overall, 70.0% (182) were dissatisfied with the level of homeschooling their children received. Respondents with higher education and income level were significantly more likely to possess a computer device, have internet access at home and prefer online classes when compared to low-income earning parents with secondary education and below.

Conclusion: There is a considerable lack of ongoing learning activities among children in Nigerian homes during the COVID-19 lockdown. Strategic context-specific blended learning approaches (including the provision of infrastructure for remote teaching and learning) are needed to mitigate the negative effect of school closures on the education of children.

Keywords: Nigeria; child (ren); COVID-19; education; parents.

1. INTRODUCTION

Education is the bedrock of every civil society and is most sought after by societies hoping to stay afloat in an ever-changing world [1]. However, never a time has the traditional method of education been threatened in the globe as is the present situation, due to the ongoing COVID-19 pandemic. According to United Nations Educational, Scientific and Cultural Organization (UNESCO), approximately 1.2 billion learners were out of school and about three-quarter of the world's school population had been affected by school closures due to measures to contain the pandemic [2]. Of these, about 2 million pre-primary, 25 million primary and 10 million secondary school learners across Nigeria were affected. The resultant effects have brought a sudden drift from the usual face-to-face learning to a more blended instructional learning that integrates online and traditional classroom modalities [3], the so-called "new normal".

The Federal Ministry of Education in Nigeria announced the sudden but temporary closure of all schools which took effect from March 23rd 2020 as a drastic measure to limit the community spread of the novel coronavirus [4]. While many children in resource-rich settings could afford to cope with the sudden shutdown of schools and adapt to the new alternative mode of education with nearly uninterrupted learning due to an advanced technological backbone via online platforms [5], this is unlikely the situation in resource-limited settings in sub-Saharan African countries including Nigeria where children are unduly disadvantaged because broad-based internet access is relatively expensive and may not be available for homeschooling of children by their parents [6,7]. However, a compulsory parent-driven homeschooling of kindergarten and school-aged children have gradually become the norm with a variable degree of learning occurring [8]. Naturally, the duration of time younger

children in pre-primary, primary and early secondary schools can be occupied for without supervision from a parent or caregiver differs from child to child. In the traditional face-to-face method of learning, teachers then pass schoolwork to parents for them to go through with the child. However, following school-closures (during the on-going pandemic) and where parents are working from home or still have to seek daily income, devoting adequate time with their children to assist with learning may be challenging. Learning outcomes in children and adolescents during the COVID-19 pandemic and lockdown should be a core responsibility of parents and caregivers. Since children and adolescents are dependent on their parents for appropriate decision making, their quality of learning activities may vary largely and depend on certain parental variables such as socioeconomic status, educational qualification and ability to enforce learning at home [8,9].

As different countries adapt to the challenges being posed on the education of school-aged children, there is growing concern about a widening of the intellectual gap in resource-limited settings [10]. The Digital 2020 Global Overview report published in January 2020 [11], showed that about 60% of Nigerians have no internet access. According to the report, about 169.2 million people (83% of Nigerians) have access to mobile connections; of these, 50% (about 85.4 million people) reside in urban areas. Therefore, for the number of people with access to the internet, the proportion will be tilted towards urban-dwelling, high-income households, where children are privileged to attend private schools with a learning advantage over their public-school counterparts. In contrast, children from low-income and poorly educated households who may have less access to the internet and reside in semi-urban or rural areas, learning will be very limited [9]. Hence, the continued closure of schools' risks exacerbating

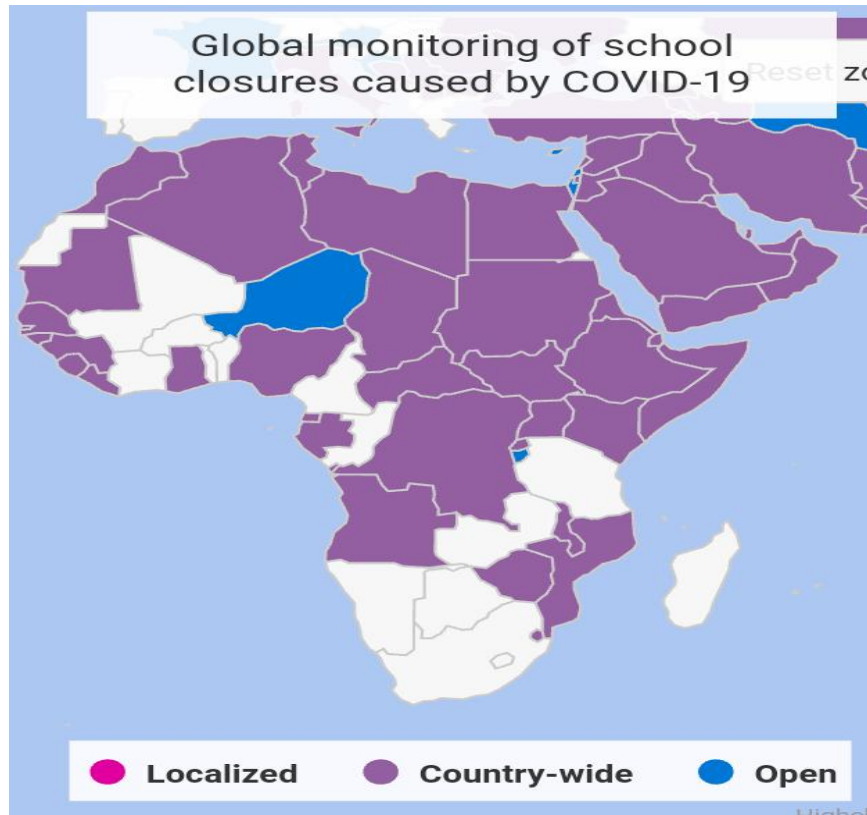


Fig. 1. UNESCO (June 08, 2020), School refers to all categories from pre-primary to tertiary level

the problem of educational inequality in Nigeria. The government of Nigeria has attempted to address the gaps by making television and radio schooling freely available to school-aged children, many centres of learning and parents grapple with encouraging homeschooling via the various learning platforms [12].

Whether the stop-gap modalities of learning instituted by the Federal Ministry of Education is preferred by parents or caregivers of children and to what extent learning schedules are being adhered to by their wards is unknown. This online survey, therefore, was done to explore parents' perspectives on education of their children affected by the stay-at-home measures still ongoing in the country.

2. MATERIALS AND METHODS

This study was a descriptive cross-sectional survey conducted from May 9 to June 8, 2020. The study involved parents or caregivers who had children within the paediatric age group (0-18 years). The sample size was estimated using

the Cochran formula for proportions $N_0 = Z^2 pq / e^2$. Author assumed $p = 11.3\%$ obtained from the prevalence of parents who completed a child survey in a previous study [13]. $N_0 =$ sample size, $Z = 1.96$ and $e = 5\%$, hence, $N_0 = 154$. To adjust for 30% non-response an estimated minimum sample size of 220 was calculated.

Using a snowball sampling technique, a questionnaire was administered through an instant message via WhatsApp Application version 2.20.199.14 (WhatsApp Inc. 2010-2020, California, USA) and using Google Doc Form. Accessible populations also shared and forwarded the survey link to their contacts and various groups to keep the survey widely distributed as far as possible, since face-to-face interviewer administration of questionnaires was not possible due to the on-going lockdown. A pre-information about the research aims were included at the start of the survey questionnaire. It was explicitly stated prior to commencement of the survey to tick the option 'yes' if consent was given that implied respondent had given consent and confidentiality was assured.

The semi-structured questionnaire was used to derive information about the respondents' socio-demographic characteristics and questions which assessed how the preventive measures (lockdown) have affected the education of their child (ren) and or adolescents.

Nigeria has 36 states including the Federal Capital Territory and is divided into six geopolitical zones as follows; South-east {Abia, Anambra, Ebonyi, Enugu, Imo}, South-south {Akwa Ibom, Bayelsa, Cross River, Rivers, Delta, Edo}, South-west {Ekiti, Lagos, Ogun, Ondo, Osun, Oyo}, North-east {Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe}, North-central {Benue, Kogi, Kwara, Nasarawa, Niger, Plateau and Federal Capital Territory}, North-west {Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, Zamfara}. This was used to ascertain the spread of the respondents and classify respondents accordingly.

Respondents average monthly income earnings were categorized into three groups, adapted from a survey by Robertson et al. [14]; Less than N100, 000 (less than 262.4 USD) = low income; N100,000 - N499,999 (262.4 – 1,312.4 USD) = Middle income; and N500,000 and above (1,312.42 USD and above) as high-income earners. Exchange rates used (1USD= N380.997) [15].

2.1 Inclusion Criteria

Parents who reside in any state in Nigeria affected by COVID outbreak and have experienced either partial or total lockdowns, own a phone with access to the internet and has the WhatsApp application installed.

2.2 Exclusion Criteria

Respondents that gave consent and submitted the online survey but had no children within the paediatric age range, or had incomplete/ missing data were excluded.

2.3 Data Analyses

Completed questionnaires were analysed using SPSS version 26 (SPSS Inc., Chicago, Illinois, USA). Simple frequencies and cross tables were performed and relevant tables were developed. Chi-square test was used to test for significant associations and p-value of 0.05 or less was considered statistically significant.

3. RESULTS AND DISCUSSION

A total of 272 respondents filled and submitted forms appropriately. Twelve respondents were excluded for being single or married but having no children, giving a total of 260 respondents who met the inclusion criteria.

3.1 Sociodemographic Characteristics of Respondents

Table 1 shows the socio-demographic characteristics of the respondents included in this study. Of the 260 respondents, females were 59.67% (155), males were 40.4% (105) and their median age was 38 years (IQR= 9), 91.9 % (239) were married, 64.2% (167) had tertiary education, 50.4% (131) had three to four children. Although respondents from all six geopolitical zones in Nigeria were represented, the majority of them were from the south-south 65.8% (171) and north-central 10.4% (27) geopolitical zones. The least represented regions were the north-west 3.5% (9) and north-east 0% (0) geo-political zones.

3.2 Preparedness for Homeschooling during COVID-19 Lockdown

While all (100.0%) of the respondents had either a TV/ radio device at home, 77.7% (202) had a computer device at home, and 93.2% (234) had internet services at home. One hundred and forty-three (55%) of the respondents spent N5000 – N9, 999 per month for internet services.

3.3 Homeschooling in COVID-19 Lockdown Era

When asked if parents were aware of the ongoing TV/radio learning sessions organized by the Federal Ministry of Health, 79.6% (207) cited being aware but only 35.4% (92) had their children participate in the TV/ radio learning sessions. One hundred and twenty (46.1%) of the parents cited that they educate their children using their computer devices at home, however, 70.0% (182) were dissatisfied with the level of homeschooling their children received.

3.4 Parents Preferred Method of Homeschooling

Although 33.8% (88) preferred their children are taught during the lockdown via the TV/ radio, 40.0% (104) preferred an online (internet) based method of homeschooling.

Table 1. Sociodemographic characteristics of respondents

Variables	Frequency	Percent (%)
Gender		
Female	155	59.6
Male	105	40.4
Marital status		
Married	239	91.9
Single	10	3.8
Separated	9	3.5
Divorced	2	0.8
Educational status		
Tertiary	167	64.2
Secondary and below	93	35.8
Number of children under respondents' care		
1-2	112	43.1
3-4	131	50.4
More than 4	17	6.5
Age categories of respondents' child(ren) **		
0-4 years	156	60.0
5-9 years	150	57.7
10-14 years	90	34.6
15 - 18 years	43	16.5
Monthly income (in Naira)		
Less than N100,000	83	31.9
N100,000 - N199,999	52	20.0
N200,000 - N299,999	46	17.7
N300,000 - N399,999	27	10.4
N400,000 - N499,999	16	6.2
Above N500,000	36	13.8
Geopolitical zones of respondents		
South-south	171	65.8
South-east	18	6.9
South-west	35	13.5
North-central	27	10.4
North-west	9	3.5
North-east	0	0.0

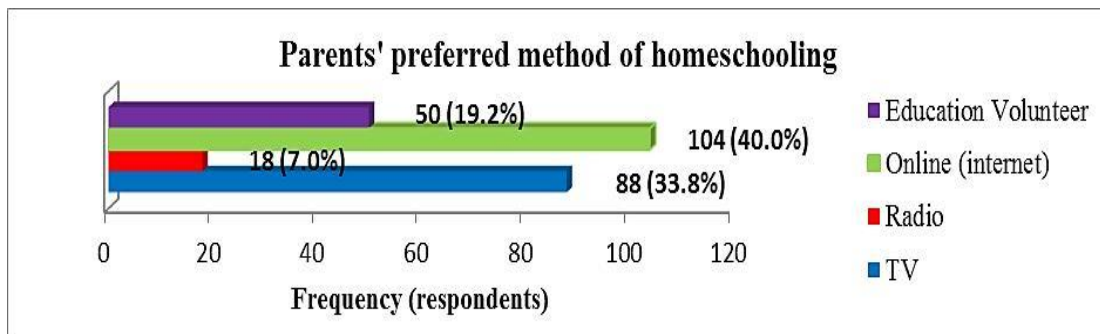


Fig. 2. Parents preferred method of homeschooling

3.5 Bivariate Analysis

On bivariate analyses, the presence of a computer device at home was associated with

participating in the TV/radio sessions (Table 2). The education status and income level of respondents were associated with having a computer device (Table 3) and internet access at

home (Table 4). The higher the income level and more educated the parents were, the more likely they were to have a computer device at home and the higher the likelihood that they would have internet access at home. Also, the educational status of the parents was significantly associated with income level.

The parents with tertiary education earned significantly more ($p < 0.001$) than their counterparts with secondary education or below. Among respondents with a tertiary level of education, 79.9% (130) were of the high or middle-income level, while 50.6% of respondents with secondary education or lower were high or middle-income earners.

Table 2. Characteristics of children who participate in TV/Radio teachings

Variable	Children who participate in daily TV/radio teaching sessions		Chi-square	p-value
	Yes (%)	No (%)		
Educational status of the respondent				
Tertiary	54 (32.3)	113 (67.7)	1.90	0.17
Secondary and below	38 (40.9)	55 (59.1)		
Geopolitical zone of residence				
South-South	57 (33.3)	114 (66.7)	4.89	0.30
South-East	8 (44.4)	10 (55.6)		
South-West	10 (28.6)	25 (71.4)		
North-Central	14 (51.9)	13 (48.1)		
North-West	3 (33.3)	6 (66.7)		
Presence of computer/tablet/palm-top at home				
Yes	65 (32.2)	137 (67.8)	4.07	0.04*
No	27 (46.6)	31 (53.4)		
Presence of internet services at home				
Yes	86 (35.4)	157 (64.6)	0.00	0.99
No	6 (35.3)	11 (64.7)		
Income level				
High income	12 (33.3)	24 (66.7)	1.67	0.44
Middle income	46 (32.6)	95 (67.4)		
Low income	34 (41.0)	49 (59.0)		

*Statistically significant **

Table 3. Relationship between respondents' socio-demographic characteristics and having a computer

Variable	Respondents with a computer at home		Chi-square	p-value
	Yes (%)	No (%)		
Educational status				
Tertiary	144 (86.2)	23 (13.8)	19.63	<0.001 *
Secondary and below	58 (62.4)	35 (37.6)		
Geopolitical zone of residence				
South-South	135 (78.9)	36 (21.1)	7.01	0.14
South-East	10 (55.6)	8 (44.4)		
South-West	26 (74.3)	9 (25.7)		
North-Central	23 (85.2)	4 (14.8)		
North-West	8 (88.9)	1 (11.1)		
Income level				
High income	36 (100.0)	0 (0.0)	38.56	<0.001*
Middle income	136 (85.1)	21 (14.9)		
Low income	46 (55.4)	37 (44.6)		

*Statistically significant **

Table 4. Comparing sociodemographic characteristics of respondents and internet access

Variable	Respondents with internet access at home		Chi-square	p-value
	Yes (%)	No (%)		
Educational status				
Tertiary	160 (95.8)	7 (4.2)	4.21	0.04*
Secondary and below	83 (89.2)	10 (10.8)		
Geopolitical zone of residence				
South-South	158 (92.4)	13 (7.6)	3.75 (Fisher's)	0.37
South-East	17 (94.4)	1 (5.6)		
South-West	35 (100.0)	0 (0.0)		
North-Central	25 (92.6)	2 (7.4)		
North-West	8 (88.9)	1 (11.1)		
Income level				
High income	36 (100.0)	0 (0.0)	13.10	0.001*
Middle income	136 (96.5)	5 (3.5)		
Low income	71 (85.5)	12 (14.5)		

*Statistically significant **

Table 5. Relationship between parental educational status and income

	Income level			Chi-square (p-value)
	High (%)	Middle (%)	Low (%)	
Educational status				
Tertiary	30 (18.0)	100 (59.9)	37 (22.2)	22.418 (<0.001)*
Secondary and below	6 (6.5)	41 (44.1)	46 (49.5)	

*Statistically significant **

Table 6. Parental income and amount spent on the internet monthly

Income level	Amount spent on internet data					Chi-square(p-value)
	Less than N5,000	N5,000- N9,999	N10,000 – N14,999	N15,000- N19,999	N20,000 and above	
High	1 (2.8)	13 (36.1)	5 (13.9)	6 (16.7)	11 (30.6)	45.076 (<0.001)*
Middle	81 (57.4)	10 (7.1)	22 (15.6)	16 (11.3)	12 (8.5)	
Low	21 (25.3)	49 (59.0)	5 (6.0)	2 (2.4)	6 (7.2)	

*Statistically significant **

Table 7. Parents' educational status and preference for online classes

Educational status	Preference for online classes		Chi-square	(p-value)
	Yes (%)	No (%)		
Tertiary	101 (60.5)	66 (39.5)	4.199	(0.04)*
Secondary and below	44 (47.3)	49 (52.7)		

*Statistically significant **

There was also a significant association between the income level of respondents and the amount spent on internet access monthly ($p < 0.001$). The higher the respondents' income level the more likely it was to spend more to purchase internet data services.

The educational status of parents was significantly associated with their preference for online classes. One hundred and one (60.5%) of respondents with tertiary education preferred online classes compared to 47.3% (44) of those with secondary education or below. This difference was statistically significant ($p = 0.04$).

3.6 Discussion

This study highlights the challenging effects of COVID-19 school closure on children's education from the perspective of parents during forced homestay due to the lockdown. It generally demonstrates a considerable lack of ongoing learning activity among children and adolescents in Nigerian homes, despite all respondents having a TV/radio device and the vast majority owning a computer device with access to the internet. This finding suggests the possibility that other factors affect children engagement in learning activities at home. One of such is the level of parental involvement in their children's learning activities at home. Children, despite having parents who had computer devices with internet access at home may not have achieved optimum online learning since less than half (46.1%) of the respondents cited they educated their children using their computer devices at home. This is possibly explained because parents are unintentionally forced to be organized; self-motivated, self-disciplined enough to grasp their children's learning materials and play a supervisory role in the absence of their teachers. More so, the lockdown had made some parents work from home making it nearly impracticable to devote quality time to ensuring adequate learning was being achieved as similarly reported [16]. Another such factor that may affect the engagement of children in learning activities at home could be that the number of internet-enabled devices available can restrict the time devoted to online learning as has been similarly reported in another study by [17]. This is of particular importance in the time of the COVID-19 lockdown when families with many children may have a greater demand for these internet-enabled devices and parents may also have to work online from home using the same device.

Even though most respondents were aware of the ongoing TV/radio supplementary learning sessions organized by the Federal Ministry of health as a measure to bridge the ensuing learning gap among children and adolescents, only about a third of respondents reported that their children had ever participated and these were significantly more from families without a computer device. The education of children whose parents are low-income earners and have below tertiary level of education had to rely on TV/radio schooling sessions and in our setting where electrical power supply is epileptic, the possibility to sustain homeschooling in the

COVID-19 times will be almost near impracticable. Besides, education via the television and radio alone may be less motivating especially among low-income, less educated households with many children as parents would prefer they engage in more income-generating activities to support the home as similarly reported in other studies [18]. This study demonstrates that these subgroups of children were disproportionately affected by the COVID-19 lockdown and school closures. This is particularly worrisome for children who do not have access to a TV/radio or a computer or smart device at home. There is the likelihood that no learning was taking place during the lockdown and school closures. Interestingly, about 20% of respondents in this study preferred volunteer educators and a similar practice has been modelled in homes in north-east Nigeria by UNICEF's community educators where home lessons and hygiene practices are taught to households [19]. Whether this model is culturally acceptable and suitable to maintain remote learning in vulnerable and hard-to-reach areas where economically disadvantaged children and their household live in Nigeria is yet to be fully explored.

This study also brings to the fore the fact that lower-income households are less likely to have computer devices at home, hence the low-income respondents' preference for TV/radio over online as a method for homeschooling during the prolonged school closures. It can also be inferred that even if some of the children of low-income earners had access to computer devices, a considerable number are more likely to rely on mobile devices to access the internet in contrast to their counterparts from households with a high-income capacity which will make learning particularly challenging. These findings have been similarly reported in a study in Nigeria [20]. The fact that the cost of internet access is not affordable and internet services are paid-out-of-pocket, is evident in this study, as nearly two-thirds of respondents spend only N5000-9,999 (13.1 – 26.2 USD) monthly for data recharge. The quanta of data such amount subscribes are arguably hardly sufficient for proper continuous homeschooling to be realistic and even the quality of internet services is of concern as similarly reported in a study in Nigeria [20]. It is therefore not surprising that the majority of respondents were dissatisfied with the level of homeschooling their children were receiving. Undoubtedly, with schools being closed, many children who are unable to access online

learning resources or whose schools are not prepared to adapt to the “new normal” will have a challenge with reduced instructional time which has been associated with widening of the knowledge gap and poor performance in reading, writing, mathematics and science [17]. Also, the COVID-19 has made more evident the digital divide that exists between children in public or low-cost private schools (predominantly attended by low-income households) and private schools (predominantly attended by high-income households) in Nigeria [21]. Even if many private schools work hard to digitalize their entire term syllabus across all subjects, how many of such schools would cope faced with the challenge of finding ways to retain their students and also make income enough to sustain mounting overhead costs which include salaries, access to the internet, training of teachers to adopt new methods and rent of infrastructure? On the other hand, the ability of the young students, teachers and parents in public schools to blend with the trend of online learning models, being aware of the pre-existing challenges the educational sector in Nigeria faced before COVID-19 further demonstrates the impact of the pandemic on education in this disadvantaged group [22].

The strength of the study lies in the fact that respondents were recruited during a critical period during the early stage of the COVID-19 pandemic and school closures were ongoing alongside the lockdown in Nigeria and not merely retrospective limiting the likelihood of bias. However, the sample size is small with limited sample representativeness. The findings are limited to parents who reside in Nigeria with considerable knowledge in the use of the internet and the ability to read and understand in the English Language. More so, the majority of respondents had a tertiary level of education. Vulnerable populations and the uneducated were not captured in the study so generalization of findings should be with caution.

4. CONCLUSION AND RECOMMENDATION

This study demonstrates that there was a considerable lack of ongoing learning activity among children and adolescents in Nigerian homes during the COVID-19 lockdown. The findings yield credence to the fact that there is a wide disparity in learning among children in Nigeria and highlight the reality of educational inequality. Children from low-income, less

educated households are severely disadvantaged as remote learning is hindered by the unavailability of structures and resources to aide homeschooling. Although the Federal Ministry of Education had made efforts to make free scheduled learning sessions available on TV/ radio stations across the nation, the majority of parents supported online learning which was significantly more among high-income, highly educated households. Education through the television and radio alone may be less appealing especially among children in low-income, less educated households as parents would prefer children to engage in more income-generating activities to support the home during school closures. Hence, the feasibility and quality of education children get at home during school closures is very limited and parents/caregivers are dissatisfied with the state of ongoing learning. Other culturally accepted and context-specific modalities should, therefore, be explored, as a “one-size-fits-all” approach would not likely be tenable in Nigeria.

There is an urgent need for strategic context-specific blended learning approaches to mitigate the negative effect of school closures on the education of children and should also include the provision of support for parents and the availability of infrastructure for remote teaching and learning.

CONSENT AND ETHICAL APPROVAL

Author hereby declares that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki. As per international standard or university standard guideline participant consent and ethical approval has been collected and preserved by the author.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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