

Learning Technologies Deployment as an Alternative to Traditional Teaching Mode During Covid-19 Pandemic Restrictions in Nigeria

Onifade O. J¹; Olomu M. O¹; Atoyebi M. K¹; Ogunjemilua E. M²; Okpuru O. A¹

¹National Centre for Technology Management, OAU, Ile-Ife, Nigeria

²Joseph Ayo Babalola University, Ikeji-Arakeji, Nigeria

Corresponding Author's E-mail: banjionifade@gmail.com

Abstract

This article presents the types of learning technologies deployed during COVID-19 pandemic restrictions by households in Nigeria, particularly among the primary and secondary school learners through the perspective of technology acceptance model. It describes the type of contact learners had with their teachers in order to establish whether learning was disrupted or not and also examined the effect of location on learning technologies deployed by households. Survey research design was used for this study and the secondary data were sourced from the World Bank's Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) for tracking the implication of COVID-19 pandemic in Nigeria. The data were analyzed with frequency, percentage and Chi-square. The study concludes that learning was not absolutely disrupted as a result of the restrictions. It further recommends provision of adequate infrastructural support that will aid learning, irrespective of location and circumstances.

Keywords: Learning, technologies, COVID-19, households

Introduction

Coronavirus (COVID-19) was officially confirmed on the 27th of February, 2020 in Nigeria by the Virology Laboratory (VL) of Lagos University Teaching Hospital (LASU) which is part of the Laboratory Network of the Nigeria Centre for Disease Control (NCDC). Due to upsurge in confirmed cases of COVID-19 in Nigeria, Federal government introduced non-pharmaceutical measures as part of preventive measures to curtail the escalation of the virus which are constant use of alcohol-based sanitizer; staying at home; maintaining physical/social distancing of at least two meters; regular wearing of face mask; regular hand washing with antiseptic soap and water; robbing of hands with alcohol-based sanitizer; coughing and sneezing to flexed elbow or tissue and immediate disposing of the used tissue; frequent cleaning of touched surfaces and objects; and fumigation of surroundings with disinfectants or decontaminators and the closure of learning institutions (NCDC, 2020).

The approval of closure of all the learning institutions in Nigeria was on 19th of March, 2020 by the Federal Ministry of Education (FME) (Nlebem, 2020). Education system of Nigeria was disrupted due to sudden closure of all learning institutions in Nigeria. Learning modes, accessibility to education-related activities, parenting routines among others were also significantly distrusted (The Education Partnership Center and the Nigerian Economic Summit Group (TEP & NESG), 2020). The closure forced students to stay at home, instigating relevant stakeholders to swiftly adjust and develop mechanisms to minimize the potential learning gaps

that might emerge from the pandemic lockdown. The sudden closure of learning institutions affected 36,400,000 primary and secondary school learners in Nigeria, counting internally displaced camps' stakeholders (United Nations Educational, Scientific, and Cultural Organization, 2020a). The Coronavirus pandemic further exacerbated challenges of the Nigerian educational system (Obiakor *et al.*, 2020). However, COVID-19 pandemic showed the need to embrace and deploy cutting-edge learning technologies in the nations 'educational system (Onyema *et al.*, 2020) as means of ameliorating the challenges posed on education in Nigeria.

Information and Communications Technology (ICT) tools powered by advanced artificial intelligence like Skype, WhatsApp, Microsoft Teams, Zoom, and Google classroom were commonly deployed to teach various subjects as well as to serve as a platform of interaction between the teachers and the students/learners (Ekong, 2020). ICT bridges the link in educational gaps that the impromptu closure of schools created and enabled educational delivery from the comfort of homes through digital technologies (Onyema *et al.*, 2020). The rapid development of ICT and the rising complexity that comes with its growing potential explains why integration of technology in education continues to receive special attention particularly, in the wake of COVID-19 pandemic.

The suspension of physical classes in all the learning institutions enhanced the adoption of digital learning technologies in place of traditional teaching and learning styles (Korkmaz and Toraman, 2020; Ali, 2020). Some learning channels were launched on various satellite networks (Samuel, 2020) such as



radio, Television, and online platforms to reach out to a large number of students (Onyema *et al.*, 2020). In support of that, as of April 2020, many states in Nigeria have adopted Television and radio means of communicating with students, whereby teachers aired educational programmes of their respective subjects and topics to students who listened and watched at the comfort of their homes (Samuel, 2020).

More so, the Federal Ministry of Education (FME) in Nigeria introduced online/virtual learning platforms and other e-learning resources whose links were displayed on their websites. Besides, the Federal Government partnered with telecommunications firms to provide free data access to online learning repositories, and also created online platforms with learning materials on STEM education (TEP and NESG 2020).

The COVID-19 pandemic lockdown necessitates swift adoption of learning technologies in educational sector in Nigeria. The mainstream learning system in classroom was succeeded by new stream virtual learning modalities; from physical and textbook learning oriented instructional materials to digital learning devices or Television-based learning which is augmented with online learning (Kado *et al.*, 2020).

However, with the introduction of the online learning platforms in Nigeria, the technology has adverse effects on the socio-economic status of the populace as some parents were forced to procure laptops, android phones, Television cables and other means of communications to ensure that their wards move on with the various platforms designed for teachers to reach out to their students, even though not every home in Nigeria can afford the purchase and monthly subscriptions of satellite/Television cables networks (Samuel, 2020). Hence, the adoption of technology-enhanced learning becomes more imperative during COVID-19 pandemic lockdown, due to high rate of COVID-19 diffusion (Ali, 2020).

Despite the awareness and effectiveness of deploying technology in learning, there are challenges attached to the new stream of learning technologies in educational system in Nigeria. Such challenges include rising cost of technological infrastructure, lack of practices and capabilities, and level of student achievement and improvement (UNICEF, 2020). The digital divide also exists as a formidable obstacle to equate education system in rural and urban areas.

The infrastructural demand and support needed to adopt and sustain technology-enhanced learning is huge and deficient in some part of the world. The World Bank (2020) is aware and mindful of the fact that few education systems, even the

highest performing, may not be well equipped to successfully deliver technology-enhanced learning for all students at such a large scale. As such, technological advances often outpace the ability of decision makers to keep up considering the cost and infrastructure support (World Bank, 2020). It is very important to establish that delivering an effective technology-enhanced learning requires appropriate technological support interns of infrastructure, tools as well as hardware and software support system (Ali, 2020).

There is no doubt that integration of technology as an instructional device in academic has escalated at a rapid rate, and there has been an exponential increasing interest in the development and deployment of multimedia-enhanced content through the use of ICT to enhance the quality of teaching and learning globally (Smith and Judd, 2020; UNESCO, 2020; World Bank, 2020). Multimedia contents combine text, graphics, audio, and animations, and the appropriate use of multimedia-enhanced content in educational context provides several benefits. In particular, there is a need to accelerate the pace of technology iteration and optimize the technical application of technology-enhanced learning considering the alarming impact of COVID-19 pandemic.

More so, it has been established that learning remotely using technology-enhanced platforms drained many students, reduced their interest, and the perceived heavy workload negatively swayed their motivation (Niemi and Kousa, 2020), while subsequent lack of interactions and communications in technology-inclined learning can possibly lead students' feelings isolated, undue worries and unstructured educational habits.

However, before the emergence of COVID-19 in Nigeria, a limited number of pre-tertiary institutions had earlier deployed and maintained one or two learning technologies and virtual science laboratories to perform experiments and bridge the communication gap between students and instructors (Abbey *et al.*, 2020). Although, during and after COVID-19 pandemic lockdown, efforts have been geared towards promoting learning by public-private partnership (PPP) and other key education stakeholders. These efforts range from adoption of "low technological solutions that do not require Internet-enabled devices (*radio and Television*) to high technological options that require Internet-enabled devices (*virtual classrooms, video conferencing, animated lessons and online resource(s) libraries*)". The swift intervention of the FME and the Universal Basic Education Commission (UBEC) manifested in the setting up of the Nigeria

Education Sector COVID-19 Response Strategy (FME, 2020). The response strategy comprises plans to learn from home programme (LHP), which was aimed at reducing the learning gap during the lockdown (TEP and NESG, 2020). In addition, FME in collaboration with educational technology companies via LHP flung virtual learning platforms and provided access to e-learning resources.

The impact of digitalization in learning is increasingly becoming conspicuous and has recently continued to grow and attract interest at an unprecedented rate. Today, digital learning is no longer a luxury, but rather a necessity in education and career development. Acquisition of knowledge and skills using electronic technologies such as computer, Internet, and phones gives an opportunity to access and share learning materials in various formats and has provided easy access to learning and promoted flexibility in learning from anywhere and anytime without place and time constraints (Rao and Sridhar, 2020; Kumar and Sridhar, 2020) except for technology failure and financial constraints.

The emergence of the pandemic has further revealed the vulnerabilities in the Nigerian education system and it is clearer now that society needs a flexible and robust system more than ever due to benefits that accrue to it sustainability and performance. Many institutions or organizations deploying technology-enhanced learning gain significant returns from their new stream of learning technology investments such as reduced cost of transportation, enhanced customer support, human resources overhead, and regulatory compliance. In addition, it has a velocity advantage by being able to reach a large number of learners in a shorter time.

Statement of Problem

Studies have shown that there is increase in the number of students that drop-out from schools in Nigeria (Benjamin & Christiana, 2018) and low level of students' enrolment. Also, globally, more than 1.2 billion children were out of school (World Economic Forum, 2020). Conscious efforts of the United Nations through the agreed Millennium Development Goals with the intention to guarantee that by 2025, children irrespective of their location will complete a full course of primary schooling (UNESCO, 2020). Likewise, efforts of Nigeria Government through Compulsory, Free Universal Basic Education Act of 2004 which is to ensure that all children of school age be enrolled in school compulsorily in order to reduce the number of out-of-school children in the country.

Despite these efforts, the increase in the number of out of school children was exacerbated by COVID-19 pandemic lockdown. Several efforts have

been geared towards ameliorating the negative effects of this pandemic restrictions on the number of out of school children in Nigeria through the adoption of different learning technologies. Although, studies have been carried out on different learning technologies deployed during the pandemic (Rao & Sridhar, 2020; Kumar & Sridhar, 2020), there is still dearth of recent panel data studies on learning technologies deployed among primary and secondary school learners in Nigeria.

This study will contribute to the body of knowledge on the adoption of learning technology with the following objectives:

- (i) Examine the types of learning technologies adopted by households during COVID-19 pandemic restrictions among primary and secondary school learners in Nigeria?
- (ii) Investigate the types of educational activities the learners engaged in during COVID-19 pandemic restrictions
- (iii) Describe the types of contact the students had with teachers during COVID-19 pandemic restrictions
- (iv) Examine the influence of location on the type of learning technologies adopted during COVID-19 pandemic restrictions in Nigeria.

Research Method

Survey research design was used for this study and the secondary data were sourced from the World Bank's Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) for tracking the implication of COVID-19 pandemic in Nigeria. The survey was conducted by the National Bureau of Statistics (NBS) in partnership with the Bill and Melinda Gates Foundation (BMGF) and the World Bank (WB). The 2019/2020 LSMS-ISA data for Nigeria, also known as 2019/2020 General Household Survey-Panel (GHS-P) include three rounds of COVID-19 National Longitudinal Phone Survey (COVID-19 NLPS). The data for the three rounds; round one (20th of April - 11th of May), round two (2nd of June - 6th of June) and round three (2nd of July - 16th of July) were collected subsequently in 2020.

The first round was conducted the federally mandated pandemic lockdown was in full effect. The second and the third rounds were conducted after some of the COVID-19 pandemic lockdown restrictions on movement were lifted. The ability to follow the same households over time makes the GHS-Panel a powerful tool for studying and

understanding the role of COVID-19 pandemic lockdown on the children’s education in Nigeria.

The sample size of 1,950 households which is nationally representative were successfully interviewed out of 3,000 households that were randomly selected from 4,394 of 2018/2019 (Wave 4) GHS Panel. The high-frequency phone survey was conducted through the Survey Solutions software for Computer Assisted Telephone Interview so as to track the implication of COVID-19 pandemic.

These high-frequency phone surveys covered different key important (KI) headings and some of it includes knowledge regarding the spread of COVID-19; prices and access to food and non-food necessities; education; employment and income losses; food insecurity; and subjective wellbeing. This study is particularly interested in tracking the impacts of COVID-19 on children’s education in Nigeria which are measured and coded in similar ways in all the attributed rounds.

Some of the variables used in this study were coded yes or no and measured thus: one, learning technologies adopted was measured with mobile learning apps, Television (*Educational Programs*), Radio (*Educational Programs*). Two, the type of education activities was measured with completion of

assignment, personal study, teaching by parent or other household member, and scheduling meetings with teachers (Tutor). Three, the type of contact the pre-tertiary students’ household had with teachers was measured with SMS, online applications, email, telephone (audio), WhatsApp, Facebook, and Household visit by teacher/Tutor. Four, the effects of sector on the type of learning technologies adopted in pre-tertiary institutions in Nigeria. Sector was measured with Rural and Urban.

The data were analyzed with descriptive statistics such as frequency, percentages and cross-tabulation and inferential statistics such as Chi-Square. The justification for using Chi-Square is that response variable (*type of technologies adopted; TV, Radio and mobile learning*) was coded dichotomously (*yes and no*) while the factor variable was also designed as Rural and Urban and dichotomously coded as 1 and 2. The data used in this study were analyzed with STATA 12 (Statistical Software Package 12).

Result

Objective 1: The type of learning technologies adopted during COVID-19 restrictions in Nigeria.

Table 1: the type of learning technologies adopted.

Learning Technologies Adopted	Rounds	Yes	No	Total
Used mobile learning apps	1	877 (92.61)	70 (7.39)	947 (100)
	2	713 (81.30)	164 (18.70)	877 (100)
	3	586 (76.81)	185 (23.99)	771 (100)
Watched Educational TV Programs	1	775 (81.84)	172 (18.16)	947 (100)
	2	593 (67.62)	284 (32.38)	877 (100)
	3	477 (61.87)	294 (38.13)	771 (100)
Listened to educational programs on Radio	1	762 (80.46)	185 (19.54)	947 (100)
	2	507 (57.81)	370 (42.19)	877 (100)
	3	432 (56.03)	339 (43.97)	771 (100)

Table 1 shows that the students used mobile learning apps for learning in round one (92.61%), round two (81.30%) and in round three (76.81%). This indicate that students in primary and secondary schools deployed mobile learning apps as one of their learning technologies during the pandemic period. Furthermore, the Table also shows that students of primary/secondary school watched educational TV programs in round one (81.84%), round two (67.62%) and round three (61.87%). This implies that Television (TV) is another learning technology adopted in the midst of pandemic lockdown. In

addition, Table 1 shows that students of primary/secondary school listened to educational programs on Radio in round one (80.46%), round two (57.81%) and round three (56.03%). This implies that Radio is one of the learning technologies adopted in the midst of pandemic lockdown.

Objective 2: The type of educational activities the students engaged in during COVID-19 Lockdown in Nigeria

Table 2
Type of Education Activities the Learners Engaged During Covid-19 Lockdown

Education activities the students	Rounds	Yes (%)	No (%)	Total
Were any of the Children attending Primary/secondary school before closed	1	1485 (92.93)	113 (7.07)	1598 (100)
	2	-	-	-
	3	-	-	-
Have the children been engaged in any educational activities in the past 7 days	1	947 (63.86)	536 (36.14)	1483 (100)
	2	877 (64.16)	490 (35.84)	1367 (100)
	3	771 (57.03)	581 (42.97)	1352 (100)
Completed assignments provided by the teacher	1	785 (82.89)	162 (17.11)	947 (100)
	2	588 (67.05)	289 (32.95)	771 (100)
	3	478 (62.00)	293 (38.00)	771 (100)
Studying/Reading on their own	1	319 (33.69)	628 (66.31)	947 (100)
	2	185 (21.09)	692 (78.91)	877 (100)
	3	170 (22.05)	601 (77.95)	771 (100)
Taught by parent or other household member	1	401 (42.34)	546 (57.66)	947 (100)
	2	222 (25.31)	655 (74.69)	877 (100)
	3	210 (27.24)	561 (72.76)	771 (100)
Session/meeting with Lesson Teacher (Tutor)	1	799 (84.37)	148 (15.63)	947 (100)
	2	604 (68.87)	273 (31.13)	877 (100)
	3	430 (55.77)	341 (44.23)	771 (100)

Table 2 shows that majority of the students (92.93%) of the households surveyed were attending primary/secondary before the pandemic lock down, which necessitated the closure of schools to curtail the spread of the disease. This indicates that the number of out of school children is very miniature before the lockdown. Meanwhile, reduction in the number of out of school children through compulsory free primary education efforts of Nigeria government through the Free Universal Basic Education Act of 2004 is yielding positive result.

However, Table 2 further shows that in round one, about 64% of the children were engaged in one educational activity or the other in the period under review while only 36.14% were not engaged in any educational activities. Additionally, in round two, about 65% of the children were engaged in educational activities in the period reviewed and only 35.84% of the children were not engaged in any educational activities. Also, in the third round, 57.03% of the children were engaged in educational activities while 42.97% of the children were not engaged in any educational activities. Descriptively, the table shows that the number of children engaged in educational activities through the use of learning technologies during COVID-19 lockdown is low

relatively to the proportion of children attending primary/secondary before the pandemic lock down.

Table 2 shows that in round one, about 83% of the students completed assignment provided by their teacher. Also, in round two, 67.05% of the students completed assignments provided by their teacher while in round three, 62% of the students completed assignments provided by their teachers. Table 2 further shows that in round one, 33.69% of the students read/study on their own, Also, in round two, 21.09 % of the students read/study on their own while in round three, 22.05 % of the students read/study on their own. In addition, Table 2 shows that in round one, 42.34% of the students were taught by parent or other household member. Also, in round two, 25.31% of the students were taught by parent or other household member while in round three, 27.24 % of the students were taught by parent or other household member. Table 2 shows that in round one, about 84.37% of the students scheduled meeting with their lesson teacher. Also, in round two, 68.87% of the students scheduled meeting with their lesson teacher while in round three, 55.77% of the students scheduled meeting with their lesson teacher.

Objective 3: The type of contact the primary and secondary learners' household had with teachers

The medium contact with teachers	Rounds	Yes (%)	No (%)	Total
Are the children or anyone else in the household in contact with their teachers	1	296 (19.96)	1187 (80)	1483 (100)
	2	509 (37.23)	858 (62.77)	1367 (100)
	3	-	-	-
SMS	1	259 (87.80)	36 (12.20)	295 (100)
	2	369 (72.50)	140 (27.50)	509 (100)
	3	-	-	-
Online applications	1	282 (95.59)	13 (4.41)	295 (100)
	2	431 (84.68)	78 (15.32)	509 (100)
	3	-	-	-
Email	1	290 (98.31)	5 (1.69)	295 (100)
	2	440 (86.44)	69 (13.56)	509 (100)
	3	-	-	-
Telephone (audio)	1	125 (42.37)	170 (57.63)	295 (100)
	2	209 (41.06)	300 (58.94)	509 (100)
	3	-	-	-
WhatsApp	1	261 (88.47)	34 (11.53)	295 (100)
	2	387 (76.03)	122 (23.97)	509 (100)
	3	-	-	-
Facebook	1	285 (96.61)	10 (3.39)	295 (100)
	2	437 (85.85)	72 (14.15)	509 (100)
	3	-	-	-
Household visit by teacher/Tutor	1	191 (64.75)	104 (35.25)	295 (100)
	2	259 (50.88)	250 (49.12)	509 (100)
	3	-	-	-

Table 3 shows that the students or anyone else in the household are not really contacting the school teachers in round one (19.96%), and round two (37.23%). This implies that students or anyone of the household are not really contacting their teachers in the midst of COVID-19 pandemic lockdown. Despite the fact that students or anyone of the household are not really contacting their teachers in the midst of COVID-19 pandemic but if they do, they use different applications/technologies such as: (i) SMS in round one (87.80%) and round two (72.50%); (ii) online applications in round one (95.59%) and round two

(84.68%); (iii) Email in round one (98.31%) and round two (86.44%); (iv) Telephone (audio) in round one (42.37%) and round two (41.06%); (v) WhatsApp in round one (88.47%) and round two (76.03%); (vi) Facebook in round one (96.61%) and round two (85.85%); and (vii) household visit by teacher/tutor in round one (64.75%) and round two (50.88%).

Objective 4: The effects of sector on the type of learning technologies adopted

Table 4: *Sector and Adoption of Learning Technologies*

Learning Technologies		Sectors		Total	X ²
		Urban (%)	Rural (%)		
Mobile Learning Apps	0	882 (40.53%)	1294 (59.47%)	2176 (100%)	X ² = 13.9116 P = 0.000
	1	211 (50.36%)	208 (49.64%)	419 (100%)	
TV	0	698 (37.83%)	1147 (62.17%)	1845 (100%)	X ² = 48.1351 P = 0.000
	1	395 (52.67%)	355 (47.33%)	355 (47.33%)	
Radio	0	725 (42.62%)	976 (57.38%)	1701 (100%)	X ² = 0.5115 P = 0.475
	1	368 (41.16%)	526 (58.84%)	894 (100%)	

Note: 0 = Yes, 1 = No; X² = Chi-Square
-Multiple response is allowed

Table 4 shows the cross-tabulation of sector and adoption of learning technologies in the pre-tertiary

institutions in Nigeria. The table shows that about 60% of the respondents from rural areas adopted

mobile learning apps while 40.53% of the remaining respondents from urban areas adopted mobile learning apps. It is however, inferred from the Chi-Square ($X^2 = 13.9116$; $P = 0.000$) that there is significant difference in mobile learning apps adopted between children of pre-tertiary institutions from urban and rural area in Nigeria.

In addition, Table 4 shows that about 62.17% of the children from Rural areas adopted Television (TV) for viewing educational programmes as one of the learning technologies during COVID-19 pandemic while 40.53% of the remaining children from Urban areas also adopted TV (*for viewing educational programmes*) as one of the learning technologies during COVID-19 pandemic. It is however, inferred from the Chi-Square ($X^2 = 48.1351$; $P = 0.000$) that there is significant difference in the adoption of Television (TV) (*for viewing educational programmes*) between children of pre-tertiary institutions from Urban and Rural area in Nigeria as one of the learning technologies during COVID-19 pandemic lockdown.

In spite that, Table 4 further shows that about 57.38% of the children from Rural areas adopted Radio (*listening to educational programmes*) as one of the learning technologies during COVID-19 pandemic lockdown while 42.62% of the remaining children from Urban areas also adopted Radio (*for listening to educational programmes*) as one of the learning technologies during COVID-19 pandemic. It is however, inferred from the Chi-Square ($X^2 = 0.5115$; $P = 0.475$) that there is no significant difference in the adoption of Radio (*for listening to educational programmes*) between children of pre-tertiary institutions from Urban and Rural area in Nigeria as one of the learning technologies during COVID-19 pandemic. Perhaps, Radio is easily accessible and affordable by citizens, irrespective of their race, age and gender among others.

Discussion of Findings

This study conforms to previous scholars' deposition on the adoption of new stream of learning technologies (Rao and Sridhar, 2020; Kumar and Sridhar, 2020; Samuel, 2020; Onyema *et al.*, 2020 and Kado *et al.*, 2020). Critically speaking, it is obvious in Table 1 that the level of learning technologies adopted in both round two and round three were relatively low to round one. In one way, the low level of learning technology adoption in COVID-19 rounds; two and three perhaps be attributed to the lifting of some of the COVID-19 pandemic lockdown restrictions on movement. In spite that, some non-pharmaceutical measures were still in place to combating the spread of COVID-19

pandemic such as social/physical distancing, appropriate use of face mask, constant washing of hands and the use of alcoholic-based sanitizers to mention a few. In another way, the increase in the electricity bills, PMS (Premium Motor Spirit) price and VAT (Value Added Tax) experienced in Nigeria during pandemic period perhaps, further exacerbate children not using TV and Radio as one of their learning technologies. Hence, the resultant effect of the identified increased in the cost of living or perhaps decrease in the quality of life (QOL) of the learners' parents.

Findings from Table 2 indicates that students are still engaging in educational activities by completing the assignment provided by their teachers before, during and after the pandemic lockdown. Nevertheless, the level of assignment completion reduced drastically in round two and three. Perhaps, this can be attributed to the report of Niemi and Kousa (2020) that learning remotely using technology enhanced platforms drained many students, reduced their interest, and the perceived heavy workload negatively swayed their motivation.

In addition, the proportion of students that read/study on their own is very small, it seems the student are not use to studying/reading on their own except they been monitored or engaged by whosoever that will tutor them. Although, it is important to know that the students will be distracted at home unlike when they are in school and monitored by their tutors. Furthermore, the proportion of students that were taught by parent or other household member is very small, it seems the parent or other household member of the student were too busy to teach the students. This might be one of the justifications why the students are not reading/studying on their own because the parent and other household member are too busy to teach the students to developing personal study characteristics. It is also justifiable to say that another reason why the students are not reading/studying on their own is because they often schedule meetings with their lesson teachers. Nevertheless, the law of diminishing return perhaps setting on the part of children scheduling meeting with their teachers in round two and round three. This might be attributed to laxity on the part of the parent or other member of the household to monitor the children's education activities during COVID-19 lock down (pandemic lockdown). Obviously, such lackadaisical attitude on the part of parents or other member of the household will negatively affect the academic performance of the children. Although, this study did not consider the academic performance of the children due to lack of academic performance evaluation data for the period.



Findings from Table 3 implies that that students or anyone of the household are not really contacting their teachers in the midst of COVID-19 pandemic but when they do, it is done through different applications/technologies such as: SMS, online applications, Email, Telephone (audio), WhatsApp, Facebook and lastly, household visit by teacher/tutor. This is so perhaps, adjusting to new normal learning and interaction amidst Covid-19 lockdown in Nigeria as one of the developing economies follow upward-slow trajectory.

Findings from Table 4 indicate that this study supports UNICEF (2020)’s report that “pupils who live in a rural household cannot be reached with some remote learning modalities (UNICEF, 2020)”. This means that rural people are at disadvantage amidst adoption of learning technologies in educational sector. The disadvantages factors to adopting learning technologies in rural area perhaps be attributed to quality of life (QoL), awareness of the needed technologies, learning curves of the case(s) technology(ies) to mention a few.

Recommendations

The study recommends that the government of Nigeria should look into how to further provide infrastructures that will aid accessibility and affordability of learning technologies irrespective of location and circumstance and as well put in place appropriate policies that will enhance efficient learning. Also, learning remotely should be made interesting by educators as an alternative to the traditional mode in order to avoid total disruption of teaching and learning in any circumstance. Furthermore, students are to be trained to develop personal study characteristics using technology.

Area of Further Study

This study did not consider the academic performance of the learners, further study may consider the academic performance of learners during COVID-19 pandemic period. Also, this study did not consider the effectiveness, efficiency and affordability of the learning technologies deployed; further studies may look into that. Furthermore, the study is limited to quantitative research method however, further study may consider mixed method for the study.

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