

Impact of Covid-19 Outbreak on Teaching and Learning in Public Secondary Schools in South-West Nigeria

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Abstract

This research-based paper aimed at assessing the impact of COVID-19 on teaching and learning in public secondary schools in South-West Nigeria. It described the socio-demographic characteristics of the respondents; assessed COVID-19 prevalence in the schools; examined its impact on teaching and learning; examined alternative teaching and learning strategies (ATLS) employed; identified teachers' challenges in using the ATLS; and determined ATLS effectiveness in the schools. Building on the transformative learning theory, a descriptive survey research design and the multi-stage sampling procedure were employed to select a sample of 930 respondents (30 principals, 300 senior school teachers, and 600 students of Grade 11 and Grade 12 classes) for the study. Data were collected using a 5-point-Likert scale questionnaire with Cronbach's alpha reliability coefficient of 0.86. Data were analyzed with descriptive statistics and weighted means. The results showed the prevalence of COVID-19 with negative impact on students who did not have access to traditional face-to-face classroom learning, while virtual online classes limited the subjects usually taught. The ATLS employed are TV & Radio, Zoom, Google Classroom, WhatsApp Group, Microsoft Team and Google Chat, and teachers' challenges in using ATLS include: unequal access to ICT-based learning, and lack of Internet facilities and connectivity, and they were not effective. It was concluded that the outbreak of the COVID-19 impacted negatively on teaching and learning in public secondary schools in South-West Nigeria, and appropriate online strategies should be provided to address this challenge.

Keywords: coronavirus, teaching and learning platform, public secondary schools

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1. Introduction

The coronavirus (COVID-19) pandemic has spread across the globe with over 236 million cases and a fatality rate of 4,831,486 recorded (WHO, 2020) and affecting socio-economic life of people and the school system. The increasing spread of the virus has been adduced to the symptomatic and asymptomatic nature of the disease, and the failure to identify and properly manage both cases by testing or screening the population (Bai et al., 2020; Addi et al., 2020). This has placed more than one-third of the entire world population under some form of restriction such as national quarantines, border closures, online work, and school closures to reduce the spread of the disease, and has equally affected the economy of many nations.

In Nigeria, the advent of COVID-19 on 11th March 2020, and the categorization of the country as one of the 13 vulnerable and high-risk African countries, led to imposing an immediate ban on international travels, lockdown of the nation's economy, and closure of all institutions of learning by the Federal Ministry of Education with the abrupt discontinuation of the face-to-face teaching and learning method on March 19, 2020 (Marbot, 2020; Nleblem, 2020). Presently, 206920 cases of COVID-19 have been confirmed, 194651 cases discharged, and 2740 deaths recorded in the 36 states of Nigeria and the Federal Capital Territory. States in South-West Nigeria were among those listed with a high increasing number of cases (NCDC, 2021).

Building on the transformative learning theory of Mezirow (1997) that learning experiences induces and shape the learner to produce a significant impact, or paradigm shift, that affects the learner's subsequent experiences, the unexpected, unplanned, and sudden shutdown of schools has a huge effect on all stakeholders, including students, teachers, parents, and the nation as a whole. According to The Education Partnership and Nigerian Economic Summit Group (TEP and NESG, 2020), about 80% of government officials in 22 states and the Federal Capital Territory claimed that the pandemic has negatively affected children's learning and wellbeing, disrupted normal academic and extra-curricular activities with the suspension of face-to-face learning, and disrupted internal and external examinations. For example, public examinations such as the West African Senior School Certificate Examination (WASSCE) and National Examination Council for Senior Secondary School Certificate (NECO SSC) were postponed, while students, teachers, and principals were under severe stress and anxiety arising from school closure. Fakoya (2020) stated that cases of neglect, sexual abuse and gender-based violence, rape, drug abuse were also likely to increase among the secondary school students, with the risk of students drop-out while some others may have been engaged in a business that is fetching them money and so may be reluctant to return to school even when the schools reopen. The lock-down also interrupted learning for

vulnerable children and caused socio-economic problems to approximately 61% of the Nigerian population who could not go to work, leading to wage loss, low productivity and poverty (NBS, 2020).

In addressing the challenges of school shut-down, UNESCO (2020) and UNICEF (2020) recommended the use of distance learning programmes and open educational platforms that schools can use to reach learners remotely to limit the disruption of education in the country. Thus, stakeholders in education have been making efforts to promote continued learning through these media to bridge the potential learning gaps in secondary school education. According to Vegas (2020), about 90% of the high-income countries provide remote learning opportunities while less than 25% of the low-income countries offer such opportunities to their learners. Only about 23% of countries in sub-Saharan Africa combine online and broadcast media platforms while only 11% rely exclusively on online platforms to engage their learners. Though some state governments in Nigeria such as Lagos, Ogun, Osun, Ondo and Ekiti introduced television and radio teaching and learning platforms, a larger number (70%) could not meet up with the learning needs of their students, as the socio-economic status of most parents, the high cost of data and the epileptic state of electricity supply in the country constituted a barrier for many students to access the platform maximally (Henry and Agbadi, 2020; Ogunode, 2020). Teaching via the radio that seems to have a wider coverage compared to other outlets has its challenges because not all the subjects can be effectively taught due to learner's state of mind, their different learning environments, students' learning styles, and the time taken to understand what is being transmitted. Only students in the private secondary schools had the privilege of continuing with their learning virtually. In addition, students' inaccessibility to technological platforms, digital tools and traditional media result in creating a pool of young adults who may never catch up and thereby create a learning gap long after the pandemic is over (Amorighoye, 2020).

According to Obiakor and Adeniran (2020) & TEP and NESG (2020), 75% of respondents claimed that lack of resources for learners is a huge challenge for remote learning in Nigeria, as children whose parents cannot afford remote learning facilities have to wait for school to re-open to continue learning. Also, 84% of government officials claimed that their states provided some alternative teaching-learning strategies (ATLS) ranging from large-scale-low-tech solutions that do not require internet-enabled devices (radio and television) to high-tech alternatives (virtual classrooms, video conferencing, animated lessons, and online resource libraries) that require internet-enabled devices during the pandemic (TEP & NESG, 2020). Furthermore, 49% of the respondents claimed that internet-based learning platforms were created for students with such educational resources as Webinar, Zoom, Google classroom, WhatsApp Voice Note, among others. Many schools, therefore, implemented their distance learning contingency plans and connected students and teachers through online platforms and tools such as the Mobile Classroom; WAEC E-Learning Tool Kit; Unity Schools Virtual Learning Platforms and Khan Academy. The Federal, State and Local governments are now partnering with broadcasting service providers to deliver educational content via television and radio during dedicated hours, while teachers and parents have had to quickly adapt to teaching in this new reality to ensure that students engage in learning.

Digital 2020 Global Overview Report shows that 58% of Nigerians are not connected to the internet while students are constrained in accessing the textbooks and reading materials for learning. Other learning strategies for bridging the gaps of academic disruption include: attending summer school and visiting libraries as home and evening lessons were not available during the lock-down, sending reading and writing materials home to children, and daily reading practice through radio broadcasts. Teachers and upper-level students can also act as virtual tutors using simple short message services (SMS) platforms to enhance the effectiveness of online and radio broadcast programmes. Thus, children learning was a challenge facing education leaders globally as a result of the pandemic (UNICEF, 2020).

Nonetheless, evidence on the effectiveness of the ATLS employed during the school shutdown to keep the learning going in public secondary schools in South-West Nigeria is limited, because many of these interventions have been adopted as immediate responses to the crisis without prior large-scale implementation. It has been a challenge facilitating practical-oriented subjects that typically engaged a large number of students through laboratory experiments. Only very few schools can afford to set up and maintain virtual science laboratories where students and teachers can work together to simulate experiments (Abbey and Hoxley, 2020). Hence, assessing the impact of the COVID-19 pandemic in schools becomes imperative.

1.1 Statement of the Problem

The outbreak of Coronavirus in Nigeria without any doubt has adversely affected the economic, agricultural, political, religious, social, transportation and educational systems of the nation. The National Centre for Disease Control (NCDC, 2020) reported that an estimate of 46 million students have been forced to stay at home in Nigeria, while, cases of COVID-19 keep increasing by the day in various states including those in South-West Nigeria. Teaching and learning have therefore been adversely affected in schools due to the government's lockdown pronouncement without any concrete alternative arrangement for the teachers and students. Most public-school students are therefore experiencing disruption in their learning because the schools are not well equipped with an alternative learning platform like ICT infrastructural facilities. In addition, the students cannot afford remote

learning resources at home while the students, teachers and parents are under stress and anxiety as to what becomes of their future with possible students' drop out due to prolonged school shut-down. This raises the following research questions: What socio-demographic characteristics do students, teachers and principals exhibit in public secondary schools in South-West Nigeria during the COVID-19 pandemic? What is the prevalence of the COVID-19 in the schools? How does the COVID-19 pandemic impact teaching and learning in schools? What alternative teaching and learning strategies (ATLS) were employed in schools during the shutdown? What are the challenges faced in utilizing the ATLS? and How effective were the ATLS to teaching and learning in the schools?

Though there are general studies on the impact of Coronavirus disease on the educational sector, there are limited studies specific to public secondary school education, particularly in South-West Nigeria. This study aimed at filling this knowledge gap.

1.2 Objectives of the Study

The main objective of the study was to assess the impact of the COVID-19 pandemic on teaching and learning in public secondary schools in South-West Nigeria, to improve education in Nigeria. Specifically, the study sought to describe the socio-demographic characteristics of students, teachers and principals in the public secondary school in South West Nigeria; examine the prevalence of COVID-19 in the schools; assess the impact of COVID-19 on teaching and learning in the schools; examine the alternative teaching and learning strategies (ATLS) employed in the schools; identify the challenges of students, teachers and principals in utilizing the ATLS in the schools; and determine the effectiveness of the ATLS on teaching and learning in the schools.

1.3 Study Hypotheses

The two null hypotheses tested are H_{01} : COVID-19 has no significant effect on public secondary school education in South-West Nigeria; H_{02} : There is no significant difference in students, teachers and principals' assessment of the effectiveness of ATLS employed in the schools.

2. Research Approach

A descriptive survey research design was used for the study. The population consisted of the principals, teachers and students of senior secondary schools, and a multistage sampling procedure was used to select respondents for the study. Three states (Ekiti, Osun & Oyo) were purposely selected out of the six (6) states in South-West Nigeria. Five (5) local government areas (LGAs) and two (2) schools per LGA were randomly selected in each state. In each school, ten (10) teachers and twenty (20) students were purposely selected from among the Grade 11 and Grade 12 classes only, to give a total of 100 teachers and 200 students per state while the principal of each school was purposely selected for the study, giving a total of 930 respondents comprising 30 principals, 300 teachers of students in Grades 11 & 12 classes, and 600 students of Grade 11 & 12 classes.

Both quantitative and qualitative approaches were used in data collection by use of questionnaires, interview guides and document analysis checklists. Data were collected using a 5-point-Likert scale questionnaire ranging from Strongly Disagree (SD) = 1, Disagree (D) = 2, Neutral (N) = 3, Agree (A) = 4, to Strongly Agree (SA) = 5. The questionnaire was subjected to content validity by experts in the Test and Measurement Department of Obafemi Awolowo University, Nigeria while its reliability was established using two schools outside the scope of the study. Cronbach's alpha was used to determine the reliability coefficient of 0.86. Data were analyzed using both descriptive statistics (frequency counts and percentages) and weighted means.

3. Findings and Discussion

3.1 The Socio-demographic Characteristics of Respondents

The socio-demographic characteristics of respondents in this study are shown in Table 1.

Table 1: Sociodemographic Characteristics of Respondents

Characteristics	Students		Teachers		Principals	
	(n = 600)	%	(n = 300)	%	(n = 30)	%
	Gender					
Male	268	44.7	148	51.0	14	46.7
Female	329	54.8	138	47.6	14	46.7
NR	3	0.5	4	1.4	2	6.7
Age Range (years)						
10-20	587	97.8	8	2.8	-	-
21-30	13	2.2	8	2.8	-	-
31-40	-	-	194	66.9	2	6.7
41-50	-	-	66	22.8	1	3.3
More than 50	-	-	10	3.4	25	83.3
NR	-	-	4	1.4	2	6.7
Mean (Std. Dev.)	12.1 (0.68)		40.1 (0.28)		58.4 (2.33)	
Discipline						
Science	254	42.3	-	-	-	-
Arts	95	15.8	-	-	-	-
Social Sciences	251	41.8	-	-	-	-
Marital Status						
Single	-	-	10	3.4	-	-
Married	-	-	256	88.3	21	70.0
Divorced	-	-	21	7.2	9	30.0
Widower	-	-	2	0.7	-	-
NR	-	-	1	0.3	-	-
Educational Qualification						
First Degree	-	-	275	94.8	8	26.7
Master Degree	-	-	10	3.4	21	70.0
PhD.	-	-	2	0.7	1	3.3
NR	-	-	3	1.0	-	-
Number of Years in Service						
1-10	-	-	131	45.2	-	-
11-20	-	-	151	52.1	1	3.3
21-30	-	-	5	1.7	22	73.3
More than 30	-	-	2	0.7	7	23.3
NR	-	-	1	0.3	-	-
Mean (Std. Dev.)			12.6 (1.75)		26.4 (2.31)	

NR= No Response (Missing)

From Table 1, about 45%, 51% and 47% of the students, teachers and principal respectively were male, 55%, 48%, and 47% were female, while 0.5%, 1.4% and 6.7% respectively did not respond to their gender. Majority of the students (97.8%) were in the age range of 10-20 years, 66.9% of teachers were in the 31-40 age bracket, while a larger percentage of the principals were in the 41-50 years age bracket. The mean and standard deviation were 12.1 (0.68) for students, 40.1 (0.28) for teachers, and 58.4 (2.33) for principals. The distribution of students showed that 42.3% were in the Science class, 41.8% in Social Sciences and 15.8% were in Arts class. While all the students were single, most teachers (88.3%) and principals (70%) were married. However, 7.2% and 30.0% of teachers and principals respectively were divorcees, while only 0.7% of the teachers were widowers.

A larger percentage (94.8%) of the teachers had a first-degree certificate, 70.0% had a Master's degree while only 3.3% had a PhD. Furthermore, 52.1% of the teachers have been in service for between 11 and 20 years while 45.2% have been in service between 1 and 10 years.

The majority of principals (73.3%) have been in service for between 21-30 years while 23.3% of them have spent more than 30 years. The mean and standard deviation of the teachers and principals were 12.6 (1.75) and 26.4 (2.31), respectively.

3.2 The Prevalence of COVID-19 in the Public Secondary Schools

The higher weighted mean (3.90) against the criterion mean (3.00) suggests that COVID-19 is prevalent in South-West Nigeria (Table 2). Responses to individual items showed that 88.6% of the respondents agreed that COVID-

19 is real in their states, 75.9% rated the fatality as high, while 68.8% indicated that its transmission is very high. Generally, 73.8% of the respondents agreed that their state is vulnerable due to the relatively large population and concentration of people at marketplaces and social events. This corroborates the report of the NCDC (2021) stating the total confirmed cases to be over 236 million people as of October 8, 2021, and over 4.8 million deaths, with Lagos state having the highest number of cases.

Table 2: Prevalence of COVID-19 in the Public Secondary Schools

Items	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Covid-19 is real in my state.	40	4.3	21	2.3	44	4.8	198	21.5	617	67.1	4.5	1.0
The fatality rate of Covid-19 is high in my state.	54	5.9	113	12.3	55	6.0	621	67.5	77	8.4	3.6	1.0
The propensity for Covid-19 transmission is very high in my state.	71	7.7	98	10.7	118	12.8	94	10.2	539	58.6	4.0	1.4
My state is one of the vulnerable states to COVID-19 in Nigeria.	65	7.1	114	12.4	62	6.7	617	67.1	62	6.7	3.5	1.0
Criterion mean = 3.00 Weighted mean = 3.90												

3.3 Impact of COVID-19 on Teaching and Learning in the Schools

The results of the impact of COVID-19 on teaching and learning in the schools showed that 87.3% (23.3 + 64.0) of the students agreed that the pandemic has increased their desire for online teaching and learning (Table 3). This is corroborated by the higher weighted mean of 3.85 recorded against the criterion mean of 3.00.

From Table 3, 82% of the students supported by a weighted mean of 3.73 suggested that their desire to learn at home has increased. About 83% with a weighted mean of 4.28 claimed that virtual class does not take care of all the subjects taught in school ($\bar{x} = 4.28$); 85.5% indicated that face-to-face teaching and learning was disrupted ($\bar{x} = 4.20$); 76.1% claimed that the students have no access to their teachers ($\bar{x} = 4.15$); 76.1% agreed that students do not have access to normal classroom environment ($\bar{x} = 4.12$); 79.9% reported that students have no access to their peers ($\bar{x} = 3.94$), 85.4% agreed that they do have access to a normal classroom environment, and a relatively larger percentage (88.4%) claimed that school shutdown has a psychological and emotional effect on them ($\bar{x} = 3.88$). However, only 26.7% of the students agreed that their reading culture has greatly increased ($\bar{x} = 2.66$) while 35.8% with a weighted mean of 2.66 claimed that school shutdown affected students' promotion or placement in the schools.

Table 3: Impact of COVID-19 on Teaching and Learning in the Public Secondary Schools

Items	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
COVID-19 pandemic has increased my desire for online teaching and learning.	31	3.4	45	4.9	41	4.5	214	23.3	589	64.0	4.4	1.0
Students' desire to learn at home has increased.	40	4.3	85	9.2	41	4.5	673	73.2	81	8.8	3.7	0.9
Students' reading culture has greatly increased.	46	5.0	567	61.6	61	6.6	142	15.4	104	11.3	2.7	1.2
Virtual class does not take care of all the subjects taught in school.	37	4.0	65	7.1	57	6.2	210	22.8	551	59.9	4.3	1.1
School shutdown has psychological and emotional effect on me	35	3.8	31	3.4	40	4.3	718	78.0	96	10.4	3.9	0.8
Pubic secondary school students have no access to face-to-face classroom learning.	40	4.3	72	7.8	25	2.7	165	17.9	618	67.2	4.4	1.1

Items	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Public secondary school students have no access to their teachers.	46	5.0	98	10.7	76	8.3	153	16.6	547	59.5	4.2	1.2
Public secondary school students have no access to their peers.	80	8.7	69	7.5	36	3.9	378	41.1	357	38.8	3.9	1.2
Face to face teaching and learning was disrupted.	41	4.5	64	7.0	28	3.0	325	35.3	462	50.2	4.2	1.1
No access to a normal classroom environment.	58	6.3	63	6.8	13	1.4	367	39.9	419	45.5	4.1	1.1
School shutdown has effect on students' promotion or placement in schools	213	23.2	343	37.3	34	3.7	201	21.8	129	14.0	2.7	1.4
Criterion mean = 3.00 Weighted mean = 3.85												

3.4 The Alternative Teaching and Learning Strategies Used during Schools' Shutdown

The results of ATLS employed by the government in the schools during the schools' shutdown showing a lower weighted mean of 2.56 against the criterion mean of 3.00 suggests that apart from the provision of Zoom ($\bar{x}=3.44$) and TV & Radio ($\bar{x} = 4.56$) with a relatively larger percentage of respondents (69.4% and 90.4% respectively), respondents' general assessment of the use of most of the ATLS listed were below acceptability level (Table 4).

The ratings of the other strategies were: WhatsApp Group Discussion ($\bar{x} = 2.37$), Google Classroom ($\bar{x} = 2.46$), Google chat ($\bar{x} = 1.64$), Microsoft Team ($\bar{x} = 1.84$) and Google docs ($\bar{x} = 1.69$) were below the criterion of acceptability of 3.00. Therefore, the two highly rated ATLS employed by the government in the public secondary schools in South-West Nigeria is the Zoom and TV& Radio platforms. This agrees with the findings of Henry and Agbadi (2020) & Ogunode, (2020) that some state governments such as Lagos, Ogun, Osun, Ondo and Ekiti introduced television and radio teaching and learning while a large number (70%) of the states across the country could not do anything to meet up with the learning needs of their students.

Table 4: Alternative Teaching and Learning Strategies Used in the Public Secondary Schools

Items	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Alternative teaching and learning strategy provided by the government was-WhatsApp Group Discussion.	251	27.3	376	40.9	52	5.7	180	19.6	61	6.6	2.37	1.25
The alternative teaching and learning strategy provided was- Google Classroom	69	7.5	566	61.5	106	11.5	151	16.4	28	3.0	2.46	0.95
The alternative teaching and learning strategy provided was- Zoom.	100	10.9	118	12.8	63	6.8	555	60.3	84	9.1	3.44	1.16
The alternative teaching and learning strategy provided was- Google chat	627	68.2	116	12.6	86	9.3	64	7.0	27	2.9	1.64	1.09
The alternative teaching and learning strategy provided was- Microsoft Team.	462	50.2	268	29.1	88	9.6	79	8.6	23	2.5	1.84	1.07
The alternative teaching and learning strategy provided was-Google docs	629	68.4	83	9.0	100	10.9	79	8.6	29	3.2	1.69	1.15

Items	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
The alternative teaching and learning strategy provided was- T.V and Radio platforms.	25	2.7	29	3.2	34	3.7	149	16.2	683	74.2	4.56	0.92
Other teaching and learning platforms were provided by government.	245	26.6	376	40.9	51	5.5	144	15.7	104	11.3	2.44	1.33
Criterion mean = 3.00 Weighted mean = 2.56												

3.5 Challenges in Utilizing the Alternative Teaching and Learning Strategies in the Schools

The challenges encountered in utilizing the alternative learning strategies in public secondary schools are shown in Table 5.

From Table 5, the weighted mean (3.79) obtained against the criterion mean (3.00) shows that all the prevailing conditions listed are challenges faced by the respondents. These include serious challenges as indicated by 89.4% of respondents agreeing to unequal access to ICT-based learning; 87.4% claimed lack of internet facilities; 86.5% indicated no regular supply of electricity at home during online classes; 85.9% claimed data supply was not made available to students for online teaching and learning; 84.5% indicated that students have no access to online materials at home; 82.4% agreed that the students have no access to internet facilities; 82.1% claimed that teachers find the online teaching method more difficult than face-to-face learning; 81.7% agreed that students have no access to internet-enabled devices to aid their learning; 79.1% agreed that teachers have no training on how to use technology to facilitate teaching; 78.5% claimed that every public secondary school has no internet connectivity services; 78.2% agreed that teachers have no pre-knowledge of online teaching; 77.7% claimed that teachers have no access to remote teaching equipment such as computer, android phone, iPhone and iPad; and 75.9% agreed that teachers find it difficult using the technology to facilitate learning. However, only 9% and 28.5% of the respondents had a weighted mean of 1.58 and 2.67 respectively lesser than the criterion mean (3.00), suggesting that access to Radio & TV by teachers and students are not too serious a challenge in public secondary schools.

Henry and Agbadi (2020) & Ogunode (2020) corroborated these findings that the epileptic state of electricity supply in the country, the socio-economic status of most parents, and the high cost of data constituted a barrier for students' access to teaching maximally on the radio and television provided by some state governments.

Table 5: Challenges of Utilizing the Alternative Learning Strategies in Public Secondary Schools in South-West Nigeria

Items	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Lack of internet facilities.	32	3.5	36	3.9	43	4.7	195	21.2	614	66.7	4.4	1.0
Unequal access to ICT-based learning.	29	3.2	40	4.3	28	3.0	199	21.6	624	67.8	4.5	1.9
There is no regular supply of electricity at home during online classes	37	4.0	37	4.0	50	5.4	391	42.5	405	44.0	4.2	0.9
Every student has no access to online materials at home	25	2.7	61	6.6	57	6.2	368	40.0	409	44.5	4.2	0.9
Teachers find it very difficult using the technology to facilitate learning.	39	4.2	80	8.7	103	11.2	597	64.9	101	11.0	3.7	1.3
Teachers find the online teaching method more difficult than face-to-face learning.	35	3.8	77	8.4	53	5.8	448	48.7	307	33.4	3.9	1.0
Teachers have no pre-knowledge of online teaching.	53	5.8	83	9.0	64	7.0	428	46.5	292	31.7	3.9	1.1
Public secondary school students have no access to internet facilities.	55	6.0	72	7.8	35	3.8	330	35.9	428	46.5	4.1	1.2

Items	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Data supply was not made available to students for online teaching and learning.	38	4.1	66	7.2	25	2.7	383	41.6	408	44.3	4.2	1.1
Teachers have no training on how to use technology to facilitate teaching.	57	6.2	80	8.7	55	6.0	610	66.3	118	12.8	3.7	1.0
Teachers have no access to radio and television sets.	650	70.7	122	13.3	66	7.2	52	5.7	30	3.3	1.6	1.1
Students have access to radio and television sets.	45	4.9	573	62.3	40	4.3	163	17.7	99	10.8	2.7	1.2
Teachers have no access to remote-teaching equipment such as computers, Android Phones, iPhone and iPad.	55	6.0	97	10.5	53	5.8	587	63.8	128	13.9	3.7	1.0
Students have no access to internet-enabled devices to aid their learning.	67	7.3	64	7.0	38	4.1	595	64.7	156	17.0	3.8	1.1
Every public secondary school has no connection to internet services.	55	6.0	74	8.0	69	7.5	150	16.3	572	62.2	4.2	1.3
Criterion mean = 3.00 Weighted mean = 3.79												

According to the National Bureau of Statistics report (NBS, 2020), approximately 61% of the Nigerian population live in extreme poverty. Teaching via the radio that seems to have a wider coverage compared to other outlets, has its demerit because not all subjects can be effectively taught via this medium as learning can be inhibited due to the learner's state of mind, the different learning environment of learners, the learning styles of students, and the time it takes to understand what is being transmitted. Similarly, Obiakor and Adeniran (2020) reported that children whose parents cannot afford remote learning facilities may have to wait for school to re-open to continue learning. Thus, the number of learners that will eventually return to school when the pandemic is over is not certain.

3.6 Effectiveness of the Alternative Teaching and Learning Strategies in the Schools

Results in Table 6 show the effectiveness of the alternative teaching and learning strategies employed in the schools as assessed by teachers, learners and principals.

Given the weighted mean of 2.97 as against the criterion mean of 3.00 in Table 6, this suggests that the ATLS were not effective. Respondents rated items that indicate high negative influence are: Not being around my classmates during classes affects my learning negatively ($\bar{x} = 4.28$), Lack of internet facilities impact negatively on online classes ($\bar{x} = 4.12$), Practical-oriented subjects involving experiments become challenging with online teaching ($\bar{x} = 4.08$), Students cannot interact with their teachers and peers ($\bar{x} = 4.06$), Remote teaching does not include the children with special needs ($\bar{x} = 3.91$), and I get distracted while learning from home ($\bar{x} = 3.75$).

Table 6: Effectiveness of the Alternative Teaching and Learning Strategies in the Public Secondary Schools

Item	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
The quality of interaction is as good as face-to-face interaction.	554	60.2	97	10.5	40	4.3	119	12.9	110	12.0	2.06	1.50
I get distracted while learning from home.	44	4.8	69	7.5	55	6.0	661	71.8	91	9.9	3.75	0.91
I learn better not seeing my teacher during classes.	260	28.3	408	44.3	96	10.4	125	13.6	31	3.4	2.19	1.09
My level of concentration is better with online classes than in school.	71	7.7	663	72.1	84	9.1	66	7.2	36	3.9	2.28	0.86

Item	SD		D		N		A		SA		Mean	SD
	n	%	n	%	n	%	n	%	n	%		
Not being around my classmates during classes affects my learning negatively.	36	3.9	71	7.7	70	7.6	170	18.5	573	62.3	4.28	1.13
Virtual environment is more conducive than school.	286	31.1	405	44.0	105	11.4	94	10.2	30	3.3	2.11	1.06
Students' participation is well monitored during virtual class.	83	9.0	563	61.2	112	12.2	125	13.6	37	4.0	2.42	0.97
My parents provide me with laptop and other incentives for online classes.	104	11.3	601	65.3	92	10.0	96	10.4	27	2.9	2.28	0.90
I have good mastery of personal computer essential for online classes.	53	5.8	642	69.8	87	9.5	116	12.6	22	2.4	2.36	0.86
Lack of internet facilities impact negatively on online classes.	41	4.5	51	5.5	67	7.3	357	38.8	404	43.9	4.12	1.06
Virtual class is well captivating therefore students' attention is sustained.	29	3.2	621	67.5	102	11.1	123	13.4	45	4.9	2.49	0.94
The amount of learning that has taken place can be measured.	228	24.8	460	50.0	73	7.9	118	12.8	41	4.5	2.22	1.09
Students cannot interact with their teachers and peers.	29	3.2	84	9.1	56	6.1	385	41.8	366	39.8	4.06	1.05
Practical-oriented subjects that involve experiments become challenging with on-line teaching.	27	2.9	67	7.3	80	8.7	381	41.4	365	39.7	4.08	1.02
Remote teaching does not include the children with special needs.	33	3.6	40	4.3	52	5.7	647	70.3	148	16.1	3.91	0.84
Criterion mean = 3.00 Weighted mean = 2.97												

The test of hypothesis also showed that though there was no statistically significant difference between students and teachers assessment of the effectiveness of ATLS employed in the schools, significant differences exist between the principal and teachers and also between the principal and students in their assessment of the effectiveness of ATLS employed in the schools.

These findings corroborate that of Abbey and Hoxley (2020) that the interventions adopted were immediate responses to the crisis without prior large-scale implementation. Hence, facilitating practical-oriented subjects that will typically engage students through laboratory experiments was challenging. It is only very few schools that can afford to set up and maintain virtual science laboratories where students and teachers can work together to simulate experiments. Similarly, Lawal (2020) noted that teachers have not been trained to teach at a distance on the use of e-learning devices because teaching online is much more difficult than teaching face-to-face. In addition, the education of children with special needs has also been threatened.

4. Conclusions

This paper has provided further insight into the way COVID-19 has impacted the activities of public secondary schools in South-West Nigeria, and the findings could be generalized to a country-wide study. The alternative learning strategies introduced by the government in public secondary schools in the wake of the COVID-19 pandemic in South-West Nigeria were not effective. This is because virtual classes did not take care of all the subjects taught in school, as corroborated by TEP & NESG (2020). Hence, teaching online became much more

difficult than teaching face-to-face as a result of the attendant challenges encountered by students, teachers and principals.

5. Recommendations

Stakeholders in public secondary schools should embrace COVID-19 and the resulting challenges for education as a transformative occurrence that could lead to innovation and a modern world for educators and students.

Government should take into consideration learners in remote areas while adopting the online teaching and learning platform as an alternative teaching-learning method. This will bridge the gap in accessing online teaching-learning facilities for all.

The online teaching and learning process should be made attractive to both teachers and learners through adequate provisions of palliatives and facilities capable of aiding the process.

Virtual classes should be designed to accommodate all the subjects taught in the schools with particular reference to practical-oriented subjects. This could be achieved through online practical demonstration of these subjects by the facilitators.

Training opportunities aimed at building the capacity of teachers in the use of different online strategies appropriate for learners in different locations should be provided, considering their peculiarities.

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