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INFLUENCE OF COVID-19 ON THE NIGERIA SECONDARY EDUCATION SYSTEM: EFFECTIVE VIRTUAL LEARNING, THE WAY FORWARD (A CASE STUDY OF ANAMBRA STATE)

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Abstract
The study examined the influence of Covid-19 on the Nigeria Education system: effective virtual learning, the way forward (a case study of Anambra State). Two research questions and two null hypotheses guided the study. Descriptive survey research design was adopted in conducting the study. The population comprised 5342 teachers in Anambra State. A sample of 534 teachers which represents 10% of the population was selected using stratified random sampling. A structured questionnaire titled "ICT Utilization in Teaching in Secondary School Questionnaire" was adopted in collection of data for the study. Face validity of the instrument was carried out by three experts. Cronbach Alpha reliability technique was used in determining the reliability coefficient of the instrument which gave a coefficient of .768 which was considered high enough and reliable for the instrument. The instrument was administered on the respondents with the help of six research assistants who were briefed on how to administer and retrieve the instrument from the respondents. Data collected for the study were analysed using mean rating, while hypotheses that guided the study were tested with the aid of independent sample t-test. Findings of the study indicated that there is a significant difference between the mean ratings of audio conferencing and conventional method of teaching in secondary schools in Anambra State and there is also a significant difference between the mean ratings of video conferencing and conventional method of teaching in secondary schools in Anambra State with the values of 1.93and 1.82 respectively, and p values of 0.006 and 0.005.

KEYWORDS: Covid-19, effective virtual learning, audio conferencing and conventional method

Introduction

The World Health Organization (WHO), in December 2019, got reports on many pneumonia cases of unidentified causes in Wuhan City, Hubei Province of China. The Chinese powers that be afterward acknowledged a novel strain of Coronavirus (SARS-COV 2) as the contributory agent World Health Organization (2020). The World Health Organization (WHO) announced that the outbreaks of the novel COVID-19 have constituted a public health emergency of international concern (Samuel, 2020). As at February 26, 2020, COVID-19 has been recognized in 34 countries, with a total of 80,239 laboratory-confirmed cases and 2,700 deaths, there was a sudden shoot up of confirmed cases of 4.9 million in at least 188 countries with 323,300 deaths and nearly 1.7 million recoveries as at 20th of

May 2020 (Samuel, 2020; Omaka-Amari *et al.*, 2020). Follow-up to the counsel of the International Health Regulation Emergency Committee, the Director-General of the WHO affirmed that COVID-19 outbreak as a Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and declared it as a pandemic on 11 March 2020 World Health Organization (2020). The outbreak has been reported in all continents, with first case in Africa reported in Egypt in February 2020 (Gilbert et. al,. 2020)

Globally, over 2.6 million confirmed cases and over 186,000 deaths have been recorded. Coronavirus (2020). Nigeria is one of the 210 countries affected globally. The first case was confirmed in Lagos State on 27 February 2020. This index case was a 44-year old man, an Italian citizen who returned from Milan, Italy, on 24 February and presented at a health facility on 26 February 2020 Nigeria Centre for Disease Control (2020). Following the confirmation of the index case, 216 people were identified as contacts to be followed up. Of these, 45 travelled out of Nigeria and one of the remaining 176 contacts was confirmed to be positive for COVID-19 on 9 March 2020 Nigeria Centre for Disease Control (2020).The country continued to experience an increase in the number of cases, which spread across several states. While majority of the initial cases were imported, most of the new cases had no travel history or contact with such people. As of 26 May 2020, there were 5,371,700 cases of COVID-19 worldwide.

In a precautionary move aimed at curtailing the spread of the corona virus (COVID – 19), the federal Government of Nigeria on 19th of March ordered the immediate closure of all educational institutions which include tertiary, secondary and primary institutions nationwide effective 23rd March, 2020; and closure of schools measure to curtail corona virus meant no more physical contacts between teachers and students to impact knowledge. Hence there arose a need for an alternative learning that didn't require physical contact. After understanding that the COVID-19 epidemic and quarantine measures would last for months, the learning process continued in a distance mode using online technologies. In fact, most states of the federation moved to digital learning at both the tertiary level, secondary and primary level. Switching to the online mode of teaching and learning also revealed several global and local challenges faced by the nation's education system.

Virtual learning, also known as digital learning or e-learning in its broadest sense, can be defined as learning acquired by means of any type of on-line media including the internet, intranets, extranets, satellite broadcasts, audio/video tapes, interactive TV and CD-ROM. It is the utilization of technological materials that support communication and cooperation of learners in the creation and exchange of knowledge, skills, competencies, values and projects (Boulton, 2013). It is computer-mediated technology based learning.While observing that mere use of computers at schools does not constitute virtual learning, Beek (2011) states that "virtual instruction is provided by teachers working remotely or by specially designed software or both and delivered to students through computers or the internet". In this regard, there are different forms of virtual learning and these include computer-based, internet-based, remote teacher online, blended learning and facilitated virtual learning (Beek, 2011). Virtual learning has also been described as an enabling process, which is based on four components of: awareness, motivation, competence and student engagement (Virtual Learning Academy, 2010).

Awareness is concerned with the knowledge and understanding of the meaning and benefits of virtual learning. Motivation refers to the drive and interest in using the technology in all kinds of learning and development. Competence refers to the knowledge, skills, abilities and behaviors required for effective virtual learning. It also involves the possession of virtual literacy to understand information technology (IT) messages.Students' engagements refer to the extent to which the students actually use or participate in virtual learning. As Kharbach (2013) notes, when these four elements are in place, one

would expect a possibility for students' constructive participation in a technology-driven world. These elements empower people to participate in applying any new technology, designing new tools and having a meaningful role in society's development and consequently, they provide a base for investigating the status of virtual learning among students in universities.

Nigeria is a country of 182,202 million people (United Nations, Department of Economic and Social Affairs, Population Division, 2015) and it is considered a major hub for commerce, culture and education in Africa. There are at least nine virtual learning initiatives at various stages of development being carried out by the education coordinating agencies of government and the Federal Ministry of Education (FME).Among these virtual learning initiatives are The Nigerian Universities Network (NUNeT) project; National Open University of Nigeria (NOUN) and National Virtual Library (Federal Ministry of Education 2007). The Nigerian Universities Network (NUNeT) project was embarked upon by the National Universities Commission with the aim to link all federal tertiary institutions in a countrywide electronic network. Besides the NUNeT, a good number of tertiary institutions have gone ahead (mostly with donor and non-governmental support) to try and achieve some form of interconnectivity and other ICT services in offices, libraries, research units and distance learning centers.

The benefits or advantages of e-learning are enormous. Some of the advantages according to Pande in Kola and Opeyemi, (2020), include flexibility, efficiency in knowledge and qualification enhancement, motivation of students' interaction, cost-effective, and others.Despite the vital roles e-learning plays in education institutions in many countries of the world: most developing nations including Nigeria are yet to unlock the full potentials of it. E-learning attempts to shift the focus of the educational environment away from the physical teacher-student context while disseminating information (Franklin and Nahari, 2018). The e-learning in some parts of the globe is not a new phenomenon in promoting education but Nigeria schools are using it to promote distance education and lifelong learning (Ajadi*et al.,* 2008). Several studies have been documented on how e-learning helps the students to receive instructions from teachers and learn adequately at all times including the vacation period (Franklin and Nahari, 2018; Aina and Olanipekun, 2018; Samuel, 2020).

Different types of virtual learning could be explored as practiced in most developed nations. The typical e-learning in most Nigerian institutions is the distance learning programme. There are concerns about how the distance learning programme could effectively teach online students by exploiting ICT technologies and collaboration to enhance in-depth interactive engagement. Some devices used for this distance learning programme are TV, CD-ROM, Radio and recently the mobile phones (Aina and Olanipekun, 2018). Suggestively, e-learning is critical to Nigerian education system as it is the use of information and communication technologies in various processes of education to support and enhance teaching and learning and therefore, to mitigate the impact of COVID-19 on Nigerian education through the adoption of e-learning especially during the period of lockdown. However, due to the rule of social distancing, any e-learning that requires physical contact during teaching and learning may not be effective.

Most academic institutions in Nigeria have registered domain names and each school has created some level of virtual environment. In fact, with the global explosion of ICT, many students in Nigeria have increased access to virtual technologies such as GSM, smart phones, internet facilities and laptops. Whether these students use the virtual technologies for learning has not been empirically established. All the universities in Nigeria have made ICT literacy compulsory for students, and have gone ahead to facilitate ICT possibilities by establishing ICT centers. Yet, many university students appear not to reap the benefits of virtual learning to transform their knowledge and life coping competencies.

Consequently, it becomes necessary to evaluate the effectiveness of virtual learning in Nigeria education system.

Purpose of the Study

The main purpose of the study is to examine the influence of covid-19 on the Nigeria secondary education system, Specifically, the study sought to:

1. Ascertain the extent audio conferencing is used in teaching and learning in secondary schools in Anambra State.
2. Ascertain the extent video conferencing is used in teaching and learning in secondary schools in Anambra State.

Research Questions

The following research questions guided the study.

1. To what extent is audio conferencing used in teaching and learning in secondary schools in Anambra State?
2. To what extent is video conferencing used in teaching and learning in secondary schools in Anambra State?

Hypotheses

The following null hypotheses where tested at .05 level of significance further guided the study.

H_{01}: There is no significant difference between audio conferencing and conventional method of teaching and learning in secondary schools in Anambra State.

H_{02}: There is no significant difference between video conferencing and conventional method of teaching and learning in secondary schools in Anambra State.

Method

The study adopted a descriptive survey research design. A Survey research design is a specific type of field study that involves the collection of data from a sample of elements drawn from a well-defined population through the use of a questionnaire (Babbie, 2010). Using the survey method, the study examined the demographic characteristics of respondents as well as assesses the level of utilization of virtual learning in teaching and learning in Anambra state. As a result, survey method is considered appropriate for this study.

Anambra State is the area of the study. It is one of the 36 states in Nigeria that practices inclusion education. It is located at the South East of Nigeria. Anambra State is made up of 21 Local Government Areas, 177 communities and has 21 local government education authorities, grouped into six education zones.

The population of the study consists of 5149 teachers in 263 Public Secondary Schools in six Education Zones in Anambra State as at 2019/2020 session. The number of teachers according to the Post Primary Schools Service Commission, Awka shows that there are 5149 teachers in the six education zone in Anambra State. This is according to the reports from Post Primary Schools Service Commission, Awka (Source:Awka PPSSC, 2020).

A sample of 534 teachers (respondents) representing 10% of the population in state public secondary schools in Anambra State was adopted for the study. In drawing the sample for the study, stratified, purposive, and simple random sampling technique was adopted to select teachers from the schools selected. Stratified sample technique was adopted to classify the schools into the six education zones. In the six education zones, eight schools were purposively selected to represent the population of

schools in each education zones, while simple random sampling technique was adopted in drawing 10% of the population teachers in each education zone

The instrument used in collecting data for this study was a questionnaire. The questionnaire was titled "Influence of Covid-19 on the Nigeria Education System: Effective Virtual Learning, The Way Forward Questionnaire". The questionnaire consisted of two sections; A and B. Section A contained question on the demographic characteristics of the respondents, while section B contained 17 items divided into 2 clusters with each cluster addressing issues of each purpose that guided the study. The responses to the questionnaire items were designed on a four-point scale of measurement as thus:

Very High Extent (VHE)	4 = 3.5 - 4.00
High Extent (HE)	3 = 2.5 - 3.49
Low Extent (LE)	2 = 1.5 - 2.49
Very Low Extent (VLE)	1 = 0.5 – 1.49

The instrument was subjected to face validation. After the experts' scrutiny of the instrument; important, useful suggestions and corrections were made.

The reliability of the instrument was determined using Cronbach Alpha Coefficient method to ascertain the internal consistency of items. In testing for reliability, copies of the questionnaire was administered on a sample of 50 teachers of public secondary schools in Abia State. The responses were analyzed, while the reliability coefficients values of .79, .83, with an average reliability coefficient of .81 were obtained indicating that the items in the instrument were homogenous. The researcher administered the instrument to the respondents with the help of two briefed research assistants. The research assistants were briefed on how to approach the respondents in their schools and were requested to strictly keep to instructions so as to ensure that the respondents were reached. The completed copies of the questionnaire were collected three days after distribution to give the respondents adequate time to complete the instrument. This exercise lasted four weeks .

The study administered 534 copies of questionnaire to the selected teachers, out of which 530 (99.25%) copies were correctly filled and returned while (0.65%) were either misplaced or wrongly filled. The outcome of this development is that the copies of questionnaire returned are enough to guarantee a valid result and conclusion

Data collected for the study were analyzed using mean and standard deviation to answer research questions and independent sample t-test to analyze the hypotheses.

Research Question One: To what extent is audio conferencing used in teaching in secondary schools in Anambra State?

Table 1: Mean Rating of the Extent of use of Audio Conferencing in Teaching in Secondary Schools In Anambra State

Questionnaire Items	Mean	Decision
1) Teachers make use of Audio conferencing in teaching delivery of subject content?	1.53	LE
2) Teachers make use of microphones in teaching delivery of subject content?	2.36	LE
3) Teachers use speakers as a teaching tool in delivery of subject content?	2.44	LE
4) Teachers use conference call in teaching delivery of subject content?	1.89	LE
5) Teachers have access to audio conferencing tools for the teaching of subject content?	2.03	LE
6) Teachers make use of audio conferencing facilities for their subject delivery?	1.79	LE
7) Audio conferencing is used to evaluate students' learning ability?	1.77	LE
Total Mean Rating ($\bar{X}$)	**13.81**	
Mean of Mean Rating ($\bar{X}$)	**1.97**	LE

Source: Field Survey, 2021

Decision Key: VHE - Very High Extent, HE - High Extent, LE – Low Extent, VLE – Very Low Extent

The data in table 1 show that teachers to a low extent agree to all the questionnaire items in the table. The information from the analysed data therefore suggests that the extent of use of audio conference in teaching in secondary schools in Anambra State is low with a mean of 1.97.

Research question 2: To what extent is video conferencing is used in teaching in secondary schools in Anambra State?

Table 3: Mean Rating of the Extent of use of video Conferencing in Teaching in Secondary Schools in Anambra State

Questionnaire items	Mean	Decision
8) Teachers lack interest in the use of video conferencing in teaching in Anambra State.	1.12	VLE
9) Teachers use video conferencing to teach in Anambra State	1.04	VLE
10) Teachers do not have the knowledge of video conferencing in teaching delivery	0.61	VLE
11) Teachers do not like giving their students assignments using video conferencing	1.5	LE
12) Teachers do not have access to video conferencing facilities	2.03	LE
13) Students pay attention and observe step by step demonstration by the teachers during video conference teaching	0.65	VLE
14) Teachers and students show non-chalant attitude in the use of video conference in teaching.	0.5	VLE
15) Teacher do not have appropriate personal ICT devices for video conference teaching	3.46	VHE
16) Teachers are dedicated and committed in using video conferencing in teaching.	2.62	HE
17) Teachers do not have enough skills to teach using video conferencing.	0.51	VLE
Total Mean Rating ($\bar{X}$)	**14.04**	
Mean of Mean Rating ($\bar{X}$)	**1.4**	**VLE**

Source: Field Survey, 2021

Decision Key: VHE - Very High Extent, HE - High Extent, LE – Low Extent, VLE – Very Low Extent Findings on table 2 above showed that teachers had to a very high extent agreed to the fact that utilization of video conferencing is used in teaching Business Studies in junior secondary schools in Awka Education zone with the response to item 15 only, they agreed to high extent on item 16,they agreed to a low extent on items 11 and 12, while the agreed to a very low extent to items 8, 9, 10, 13, 14, and 17. The average mean ratings also showed that teachers agreed to a very low extent with mean ratings of 1.4. This means that teachers agreed to a very low extent the utilization of video conferencing in teaching in secondary schools in Anambra State.

Test of Hypotheses

Hypothesis One: There is no significant difference between audio conferencing and conventional method of teaching secondaryschools in Anambra State.

Table 3: T-test analysis of Audio Conferencing and Conventional Method of teaching in Secondary Schools in Anambra State/

Method of Teaching	N	x̄	SD	Df	t-value	p-value	Decision
Audio Conferencing	164	2.68	10.23	532	1.93	0.006	Significant
Conventional method	370	2.79	11.14				

Key: SD = Standard Deviation, Df = Degree of freedom, Significant = p < 0.05

The data presented in Table 3 shows that the aggregate mean responses of audio conferencing and conventional method of teaching in secondary school are 2.68 and 2.79 respectively on the use of audio

conferencing and conventional method of teaching Business Studies in junior secondary schools in Anambra State. The corresponding values of standard deviations are 10.23 and 11.14 for audio conferencing and conventional method of teaching in Secondary schools in Anambra State. The table reveals a t-value of 1.93 at a 532 degree of freedom with a p-value of 0.006. Since the p-value (0.006) is less than the critical value (0.05), the null hypothesis is therefore rejected. Hence, there is a significant difference between the mean ratings of audio conferencing and conventional method of teaching in secondary in Anambra State

Thesis Two: There is no significant difference between video conferencing and conventional method of teaching in Secondary schools in Anambra State.

Table 4: T-test analysis of Video Conferencing and Conventional Method of teaching in Secondary schools in Anambra State.

Method of Teaching	N	$\bar{x}$	SD	Df	t-value	p-value	Decision
Video Conferencing	115	1.13	1.73	532	1.82	0.005	Significant
Conventional method	419	2.25	1.64				

Key: SD = Standard Deviation, Df = Degree of freedom, Significant = p < 0.05

The data presented in Table 4 shows that the aggregate mean responses of video conferencing and conventional method of teaching are 1.13and 2.25 respectively on the use of video conferencing and conventional method of teaching in secondary schools in Anambra State. The corresponding values of standard deviations are 1.73 and 1.64 for video conferencing and conventional method of teaching in Anambra State. The table reveals a t-value of 1.82 at a 70 degree of freedom with a p-value of 0.005. Since the p-value (0.005) is less than the critical value (0.05), the null hypothesis is therefore rejected. Hence, there is a significant difference between the mean ratings of video conferencing and conventional method of teaching in secondary schools in Anambra State.

Discussion of Findings

The findings of the study are discussed in line with the research questions and hypotheses that guided the study.

Findings from from the analysed data therefore showed that the extent of use of audio conference in teaching in secondary schools in Anambra State is low with a mean of 1.97. Consequent to the findings the t –test result also indicated there is a statistical significant difference between the usage of audio conferencing and convectional teaching in secondary schools in Anambra State.

Furthermore, the average mean ratings also showed that teachers agreed to a very low extent with mean ratings of 1.4. This means that teachers agreed to a very low extent in the utilization of video conferencing in teaching in secondary schools in Anambra State The test of t-test result revealed that there is a significant difference in the use of video conferencing and conventional method teaching in secondary schools in Anambra State with more teachers using conventional method in teaching delivery. This agrees with Pixlee (2007) who examined the use of video conferencing as a delivery method for tutoring low-achieving students in middle and high schools and found videoconferencing to provide a high-quality experience for students.

Conclusion

Nigerian education system has been affected by the covid-19 pandemic, that notwithstanding, it also gave rise to seeking alternative means of engaging in the learning process which brought about virtual learning as a way to carry on with learning without physical contact. The integration of virtual learning into the education system across the globe is believed to have a crucial impact on the education system

in Nigeria. Thus, the findings of this study revealed that teachers are not continually exposed to the capabilities of ICT devices towards change. It is evident from the findings in the study that some schools that have not put more effort to integrate ICT in teaching. With this, teachers are faced with the responsibility to utilize ICT in the teaching and learning in Anambra State. The findings also reveal that teachers in this digital age should adopt a paradigm shift from old traditional methods of teaching to new methods of teaching in order to implement ICT integration effectively. This will enable them to cater for the needs of 21st century learners.

It is evident that the education sector of Anambra State and the country at large are overwhelmed with list of problems ranging from underfunding to mismanagement. If the educational sector throughout the region is to maintain maximum standards, it should be provided with adequate funds, adequate security, ICT infrastructural facilities in term of modern classrooms equipped with electronic ICT systems which are connected to the internet and highly teaching and admin staff that can effectively utilize these resources.

Recommendations

From the findings of the study, the following recommendations were made:

1. Teachers should be provided with adequate technological resources, technical support and administrative support to encourage them to successfully use ICT in teaching and learning as non-availability of these resources hinder them from using ICT to teach.

2. Effort should be made to enhance the knowledge of teachers through various seminars, workshops, in-service training on ICT programme

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3. ICT laboratory should be provided for all schools in order to the use of ICT real to learners.

4. Teachers should be given sufficient training on how to use ICT devices in teaching and learning processes to acquire the requisite knowledge and skills in integrating the technology in classrooms.
5. Students should be involved in using ICT in learning activities such as doing assignments and searching the internet for learning resources because it is believed that ICT can enhance teacher and student interaction and also tends to increase students learning motivations.

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