

**UTILIZATION OF E-LEARNING RESOURCES DURING THE PERIOD OF  
COVID-19 PANDEMIC FOR INSTRUCTIONAL DELIVERY IN SENIOR  
SECONDARY SCHOOLS IN DELTA STATE, NIGERIA**

By

**ISAGBA, SHEILA**

**&**

**PROF. ONYEIKE, V. C**

Department of Educational Management, Faculty of Education,  
University of Port Harcourt, Rivers State, Nigeria

**Abstract**

This study investigated utilization of e-learning resources during the period of Covid-19 pandemic for instructional delivery in senior secondary schools in Delta State. Two objectives, two research questions and five hypotheses guided the study. The study adopted descriptive design. The population of this study was all the 7,084 teachers, comprising 3,144 male and 3,940 female serving in public senior secondary schools in Delta State. The sample size was 500 teachers, comprising 234 male and 266 female teachers serving in public senior secondary schools in Delta State. The stratified simple random sampling technique was used along with proportionate sampling method to draw the respondents from each of the 11 education zones in the state. The instrument used to generate data was a self-structured 12-item questionnaire titled 'Utilization of E-learning Resources during the Period of Pandemic in Secondary Schools Questionnaire'. Test re-test was used to establish the reliability coefficient of the instrument at 0.83. The research questions were answered using mean and standard deviation, while the hypotheses were tested at 0.05 significant level using the z-test. The study revealed among others that computer enhanced e-learning to a high extent in senior secondary schools during the period of Covid-19 pandemic in Delta State. The female teachers had higher opinion on the extent computer enhanced e-learning in secondary schools. This study further found out that television enhanced e-learning to a low extent in senior secondary schools during the period of Covid-19 pandemic in Delta State. Urban teachers had stronger opinion on the extent television enhanced e-learning in secondary schools. This study recommended that school managers should integrate e-learning to the mainstream of regular educational system so that teaching and learning would continue seamlessly during the period of pandemic. The study further showed that government should equip public schools with e-learning facilities (such as computers and broadcast equipment, etc.) so that teachers can utilize them to carry out teaching and learning during Covid-19 pandemic and beyond.

**Keywords:** *Utilization, E-learning resource, Instructional delivery, Covid-19 Pandemic.*

## **Introduction**

The outbreak of Covid-19 virus in Chinese city of Wuhan in December 2019 made many nations to close their borders and shutdown economies, resulting in extended school cessation to prevent further spread of the highly communicable and deadly disease. The abrupt school closures exerted destabilising effects on education sector, having sent over 46 million Nigerian students back to their homes (United Nations International Children's Emergency Fund [UNICEF], 2020), and wiped away achievements that may take several years to regain. As the sector is still reeling from the devastating impacts of the pandemic, it is important for educators and learners to see Covid-19 as a test of their resilience, adaptability, and capacity to advance teaching and learning activities amid the raging pandemic which has been declared as a Public Health Emergence of International Concern (PHEIC) by World Health Organization (WHO, 2020).

The word pandemic is used to describe an outbreak and widespread of contagious disease infecting a sizable number of people over a wide geographical area. Pandemic may also be described as a sudden outbreak of disease spreading through movement of people, and transmittable via person-to-person contact (WHO, 2015). Respiratory viruses such as Vibrio Cholera, Black Death, influenza and Covid-19 are examples of pandemics that have inflicted horrendous impacts on human life, education and other aspects of social lives. While greater attention is being given to health issues in response to Covid-19 crisis, education should not be

left unattended because both of them have identical importance and exert similar implications on socio-economic development of the society. There is no doubt that the extended pause in teaching and learning activities occasioned by the virus outbreak triggered learning regression among students, especially among slow-learners and low-achievers whom teachers have to accord additional support in the reopened schools.

While efforts are being made to contain and eliminate Covid-19 disease, there is greater need to sustain teaching and learning activities through relevant Information Communication Technological (ICT) mediums that agree with physical distancing guidelines. Doubtlessly, discussions in education have been dominated by issues related to whether Electronic Learning Resources (ELR) and Information Technologies (IT) can effectively fill the vacuum created by cessation or irregularity of face-to-face instruction. Admittedly, it is no longer news that technologies has stepped in to bridge the vacuum created by learning disruptions, nevertheless, the extent electronic learning (e-learning) can be adapted to sustain instruction during Covid-19 palaver as well as how it can shape teaching and learning activities in the near future is still an on-going discussion in literature. However, it is important to note that thinking about education in today's world without Information Communication Technologies (ICTs) is simply a bizarre thought given the growth, penetration and utility of ICTs in the society. It is therefore of important consequence that educators and

government should key into this global paradigm shift to digital economy, because not incorporating e-learning into the nation's didactic mix will amount to living in past reality. E-learning is on-going innovation in education systems that commenced in late 20<sup>th</sup> century following the evolution of ICTs. Literature in this area has shown that e-learning is a dynamic concept; it is evolving and open to different conceptualizations because people look at it from different perspectives influenced by changing capabilities and adaptability of electronic and related devices used in educational settings.

According to Usman and Igbozuruike (2019) e-learning is defined as a learning procedure that embraces all pedagogical models that are applicable to using digital technologies and multimedia gadgets to foster access to learning resources, improve communication and conversation during learning process, and uses electronic tools to further learners' understanding. Unlike the conventional in-person education in which students are passive learners, e-learning empowers students to be active learners. Under e-learning, the teacher is more of a facilitator, tasked with helping, guiding and supporting learners to take responsibility for their learning. E-learning affords students exciting heaven whereby they can conveniently participate in instruction and regulated academic discussions in digital spaces using customized user interfaces that enable students to access their school websites, blogs, and forums for synchronous and asynchronous interactions such as zoom

application and Google Classroom. The finding is reinforced by Patrick and Powell (2009), who reported that high school students taught with virtual learning technique performed higher in learning outcomes than their counterpart taught with face-to-face instruction.

E-learning can be conducted for small and large groups of learners who are synchronously connected through network feed relaying live-streams of instructors-led virtual instruction, which may be through video-conferencing, audio-conferencing, chats and so much more. Group e-learning can also be asynchronous, if communication system between learners and their instructors allows for time-lag in relaying or receiving responses communicated. This feature implies that e-learning can be self-paced. Self-paced e-learning is a learning approach whereby individual students can use internet-enabled electronic devices to access remote learning materials from relevant database to aid learning at their convenient time. Under self-paced e-learning, a downloaded learning contents can be processed by the learner or studied offline using networked computer system comprising input and output devices and applications such as document-viewers, printers, scanners, Microsoft Office packages and audio-video players, etc. E-learning also embraces computer-managed instruction in which electronic resources are utilized to record and process educational records, compile students' tests scores, and track their performances, progress and record other documentations in the secondary schools using computer as a resource.

Resource is anything that can be utilized to accomplish a given objective. It may also be referred to as useful persons, object or facilities that can be used to accomplish tasks and achieve set objectives. In this view, resources include money, expertise of employees and productive infrastructural facilities (Maduagwu & Nworgu, 2006). In the context of this paper, learning resource is considered as any apparatus or instructional-aid that enhances teacher's ability to impart knowledge on the learners. E-learning resources can therefore be defined as all electronic facilities that can be used to digitize, adapt, store and exchange educational information and contents between geographically separated learners and their instructors (Ikyumen & Fiase, 2010). This agrees with Ukaigwe and Igbozuruike (2020), who remarked that e-learning resources include television, radio, television e-libraries, computer and its peripheries smartphones, projectors, DVD-players, digital whiteboards, recorders, camcorder, application software and host of other electronic devices that can be used to facilitate both individualized and online group learning.

Utilization is the application of any resource or service to accomplish a given task. Utilization of e-learning resources can therefore be defined as the degree to which educational organizations and learners employ e-learning resources in facilitating teaching and learning activities (Okpechi, et al., 2018). Scholar like Eduard and Lucian (2020) has argued that utilization of electronic resources (e-resources) to sustain and further educational activities is a choice educators

and learners have to make to ensure that learning continued in order to prevent learning reversal as overstaying away from learning may degenerate learners cognition and achievement. Computer is a machine that can accept data from input devices, process the data logically using sets of coded rules and instruction to produce information and store in its memory for future purpose (Nwaneri & Ikwegbu, 2017). Computer has become useful in all types of educational environment to carry out teaching and learning exercise such as instruction, training, demonstration, dramatization, drilling, simulation and utilization of application software to organize and execute managerial tasks in schools. Internet enabled computer affords real-time communication technologies and other interactive mechanisms that give room for enhanced discussions and interaction between teachers and students online and offline. This implies that computer affords students opportunities to ask their teachers questions and receive feedbacks instantaneously.

Television (TV) is another e-learning medium designed for synchronous transmission of audio-visual signals or moving-pictures. Zacharia and Twinomugisha (2020) defined television-assisted instruction as the use of TV to transmit audio-visual contents of educational relevance to remote learners. Television-assisted learning (TVAL) is another e-learning media reputed for its large coverage and capability to transmit quality audio-visual signals to distant viewers/learners. The blend of moving images and audio signals has strong appeal to human auditory and visual senses,

which are the main gateways for information reception and knowledge acquisition among humans. Saglik and Ozturk (2001) remarked that television makes it easier to teach abstract concepts using audio-visual simulation, animated drawing, and pictures to illustrate and properly explain complex or abstruse concepts and objects to students. TVAL has the ability to boost the quality of instruction and enhance students' participation given that many household have access to television (Burns & Santally, 2019). Most television-assisted learning activities involves one-way communication of live and pre-recorded audio or audio-visual contents. This may pose a challenge and undermine interactivity during learning as interaction is a core feature of effective teaching and learning. However, experience has shown that this challenged can be remedied if backchannel communication facilities are introduced to boost instructor-learner interaction. During interactive live-broadcast programmes, telephone calls, instant messages and social media portals can be used to support and facilitate interactions and feedbacks. With efficient backchannels, students streaming online lessons from their respective homes can leverage standby technologies to express their thoughts and ideas while lesson is underway. To ensure that all students are carried along, the team of teachers in the studio may pause and address some of the received questions.

Previous studies on e-learning mostly focused on availability and accessibility of e-learning resources, which are both issues of concern so long as e-learning

implementation is concerned in developing countries. However, the emergence of Covid-19 has presented new challenges to education managers. In fact it has boxed education managers to the corner where they have to accept e-learning as part of broader spectrum of education delivery system, which educators can leverage to sustain quality education delivery during and after Covid-19 pandemic. More importantly, there are apprehension that spikes in new infections may rise as schools reopens fully given that some countries like United Kingdom, France and Germany that re-opened their schools had to impose national lockdown and school closures again due to new coronavirus outbreaks and mutation. Given these issues, dangers and challenges, education managers and teachers are obligated to device alternative of administering and delivering instruction to remote students as education cannot wait for the pandemic to go away, hence this study seeks to ascertain the extent e-learning resources enhance teaching and learning in during the period of pandemic in public senior secondary education in Delta State, Nigeria.

### **Statement of the Problem**

There is no doubt that most students have unlearned what took them months or even years to learn because of the prolonged school closures caused by Covid-19 pandemic. Such learning losses may never be recovered, especially for slow learners and underachievers. Some students have even complained bitterly about the effects of the pandemic-related school closure on their life; some are very distraught because their graduation plans were jeopardized by

cessation of learning, while some are emotionally troubled due to prolonged idleness and lack of academic guidance and learning. Educators in the reopened schools are working under pressure as limited time to complete their schemes and modules is mostly not enough. This has exposed the teachers and students to mental and physical stress because they are made to spend extended time in school in order to teach and learn respectively. It is unlikely that students can gain much from this sort of extra-intensive learning pace, and thus may not be ideal for preparing students adequately for standardized examination, and this could further impact negatively on students' performances.

These issues resonates the existential challenge Covid-19 poses to conventional in-person education mode, and thus highlights the fact that education can no longer wait for the virus to go away. As fears of second outbreak of coronavirus lurk around, there is urgent need for educators to rethink quickly on alternative ways they can take advantage of technologies to further formal instruction deliveries to distant and nearby students using e-learning resources such as computer, television and other accessories. Although, e-learning comes with some challenges, however blending e-learning resources appears to be a practical means of delivering instructions to students during pandemic and beyond. This study therefore seeks to examine the extent e-learning resources such as computer and television enhance instructional delivery to secondary school students during the period of pandemic.

### **Aim and Objectives of the Study**

The aim of this study is to investigate utilization of e-learning resource during the period of Covid-19 pandemic for instructional delivery in secondary schools in the state. Specifically, the objectives of this study were to;

1. determine the extent of computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.
2. find out the extent of television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

### **Research Questions**

The following research questions guided the study.

1. What is the extent of computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State?
2. What is the extent of television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State?

### **Hypotheses**

The following hypotheses at 0.05 alpha level were tested in the study.

1. There is no significant difference between the mean ratings of male and female teachers on the extent of computer utilization for instructional delivery during the period of Covid-

19 pandemic in secondary schools in Delta State.

2. There is no significant difference between the mean ratings of teachers in urban and rural on the extent of television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

### **Methodology**

The study adopted the descriptive design. The population of this study was all the 7,084 teachers in the 427 public secondary schools in the 11 education zones of the 25 Local Government Areas in Delta State. Some of the schools were classified as urban and rural, mixed and single-sexed, largely populated and lowly populated. 3,144 of the population were male, while 3,940 were female. 2,973 live in urban areas whereas 4,111 live in the rural areas. The sample size of this study was 500 teachers, comprising 234 male and 266 female teachers serving in public senior secondary schools in Delta State. Out of the 500 respondents, 209 were residing in urban centres while 291 were resident in

rural areas. The stratified sampling simple random technique was used to draw the sample. The instrument used to generate data was a self-structured 12-items questionnaire titled “Utilization of E-learning Resources during the Period of Pandemic in Secondary Schools Questionnaire (UERCPPSSQ)”. It was divided into two sections, namely, Section A and Section B. Section A contained items seeking data on demographic variables of the respondents, while section B contained items assessing the two variables investigated in this study. Test re-test was used to establish the reliability co-efficient of the instrument at 0.83. The modified four-point Likert-type rating scale of Very High Extent (4 points), High Extent (3 points), Low Extent (2 points) and Very Low Extent (1 point) was used to code responses. Items that scored  $x \geq 2.50$  criteria were accepted whereas those below the criteria were deemed rejected by the respondents. The research questions were answered using simple mean statistics and standard deviation, while the hypotheses were tested at 0.05 significant level using the z-test.

## Data Analysis and Results

**Research Question One:** What is the extent of computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State?

**Table 1: Mean and standard deviation of urban and rural teachers on the extent computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State**

S/N Questionnaire Items		Means of Teachers					
		Male (n= 231)			Female (n= 262)		
		$\bar{X}$	S. D.	Remarks	$\bar{X}$	S. D.	Remarks
1	Computer-assisted learning facilitates instructional delivery to remote students during pandemic	2.27	0.77	Low Extent	2.33	0.76	Low Extent
2	Internet enabled computer assists teachers to interact with distant students on real-time.	2.14	0.73	Low Extent	2.24	0.68	Low Extent
3	Some computer programs assist learners to watch video for practical drills	2.75	0.79	High Extent	2.69	0.67	High Extent
4	Students use computer to download instructional contents to enhance individualized learning during pandemic.	2.70	0.74	High Extent	2.95	0.64	High Extent
5	Internet enabled computer aids instructional conference during pandemic	2.68	0.79	High Extent	2.85	0.65	High Extent
6	Multimedia facilities in computer facilitate self-paced learning among students during pandemic	2.50	0.80	High Extent	2.37	0.77	Low Extent
<b>Aggregate Mean and SD</b>		<b>2.51</b>	<b>0.77</b>		<b>2.57</b>	<b>0.70</b>	

In table 1 above, items 3, 4, and 5 were agreed to a high extent by both male and female respondents, while items 1 and 2 were agreed to a low extent by both male and female respondents, and this yielded aggregate mean score of 2.51 and standard deviation of 0.77 for male respondents, whereas mean score of 2.57 and standard deviation of 0.70 were obtained for the

female respondents. Since these aggregates mean scores (2.51;2.57) are higher than the criterion mean of 2.50, the itemized statements that yielded high extents are thus the extents of computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.



**Research Question Two:** What is the extent of television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State?

**Table 2:** Mean and standard deviation of urban and rural teachers on the extent television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State

S/N	Questionnaire of Items	Means of Teachers					
		Urban (n= 207)			Rural (n=286)		
		$\bar{X}$	S. D.	Remarks	$\bar{X}$	S. D.	Remarks
7	Television broadcast facilitates transmission instruction effectively at senior secondary school level during pandemic	2.54	0.91	High Extent	2.15	0.97	Low Extent
8	Teachers use television to disseminate assignments to students during pandemic	2.29	0.63	Low Extent	2.42	0.81	Low Extent
9	Teachers instruct students via interactive television broadcast with the support of backchannels (such as text messages and calls).	2.26	0.72	Low Extent	2.27	0.67	Low Extent
10	Students are enthusiastic about learning via television broadcast.	2.58	0.81	High Extent	2.51	0.81	High Extent
11	The audio-visual capacity of television helps learners to understand concepts faster.	2.93	0.56	High Extent	2.56	0.80	High Extent
12	The use of television broadcast to transmit instruction during pandemic enhances students' learning outcomes.	2.50	0.69	High Extent	2.54	0.54	High Extent
<b>Aggregate Mean and SD</b>		<b>2.52</b>	<b>0.72</b>		<b>2.41</b>	<b>0.77</b>	

In table 2 above, items 7, 10, 11 and 12 were agreed to a high extent by urban respondents, while items 8 and 9 were agreed at a low extent by same respondents and this yielded aggregate mean score of 2.52 and standard deviation of 0.72 for urban respondents. The rural respondents agreed to a high extent on items 22, 23 and 24 and this yielded

aggregate mean score of 2.41 and standard deviation of 0.77. Since the aggregate mean scores of 2.52 and 2.41 were obtained for rural and urban respondents, the itemized statements express the extents of television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

### Test of Hypotheses

**H<sub>01</sub>:** There is no significant difference between the mean ratings of male and female teachers on the extent of computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

**Table 3:** z-test analysis of the difference between male and female teachers on the extent of computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

Variables (Teachers)	n	Mean	SD	Df	z-cal.	z-crit.	Sig. Level	Remark
Male Teachers	231	2.51	0.77	491	-0.77	±1.96	0.05	Not significant (H <sub>01</sub> accepted)
Female Teachers	262	2.57	0.70					

In table 3, the z-cal. value of -0.77 is lower than the z-crit of ±1.96 at sig. level of 0.05 with degree of freedom of 491; therefore the above null hypothesis was accepted. This implies that there is no significant difference between the mean scores of

male and female respondents on the extent computer utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

**H<sub>02</sub>:** There is no significant difference between the mean ratings of teachers in urban and rural area on the extent television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

**Table 4:** z-test analysis of the difference between teachers in urban and rural on the extent television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

Variables (Teachers)	n	Mean	SD	Df	z-cal.	z-crit.	Sig. Level	Remark
Urban Teachers	207	2.52	0.72	491	1.41	±1.96	0.05	Not Significant (H <sub>02</sub> accepted)
Rural Teachers	286	2.41	0.77					

In table 4, the z-cal. value of 1.41 is lower than z-crit of ±1.96 at sig. level of 0.05 with degree of freedom of 491; therefore the above null hypothesis was rejected. This implies that there is significant difference between the mean scores of urban and rural respondents on the extent

television utilization for instructional delivery during the period of Covid-19 pandemic in secondary schools in Delta State.

## **Discussion of Findings**

### **Extent computer enhance e-learning in senior secondary schools during pandemic**

This study revealed that computer enhances e-learning to a high extent in senior secondary schools during pandemic in Delta State. This male teachers had higher opinion on the extent computer enhances e-learning. The reason for these findings is because the respondents were in agreement that computer facilitates instructional delivery to remote students, assists teachers to interact with distant students on real-time and assist students to watch video for practical drills, download instructional contents and learn and individually. This may be related to flexible features of computer that afford robust communication channels that allow students to ask questions and receive feedback instantly. Such timely communication advantages are particularly crucial for students who may seek for instant clarifications from the teacher to reinforce knowledge. These findings are in agreement with the Bergman and Cheney (1996), who reported that computer helps to improve students' knowledge, especially when multimedia tools are combined to invoke the synergy of multi-senses in learning process.

These findings are also in line with Okaz (2015), who corroborated that computer offers simulative learning opportunities involving depiction of graphically manipulated images of objects using three-dimensional (3D) graphics and sound description, which Al-Fraihat et al. (2020) reported to be effective for helping the teacher to retain the interest and

satisfaction of learners, so that through satisfying instructional experience, students' learning outcomes may be enhanced. Nwaneri and Ikwegbu (2017) remarked that computer can also assist learners to connect with their teachers virtually via a designated website or online platform through which teachers can conduct instruction to all connected students. This is possible because there are many application software students can use to stream online classes; some even has recording functionalities that assist students to record lessons or download pre-recorded uploads for further learning.

The findings of this study is in tandem with Olaniran et al. (2017), who found that teachers' regularly use computer and internet to access electronic mail, YouTube, Facebook, laptop, smart phone, e-journal and e-books, radio and TV, adding that the rate of teacher utilization of e-resources was 20%. These corroborate the findings of Nwana (2012), who reported that offline computer systems, telephone and wireless applications, scanners, printers and CD-ROM were used to organize e-learning. Furthermore, this study showed that there was no significant difference between the mean scores of male and female respondents on the extent computer enhanced e-learning in secondary schools during the period of pandemic. This is partly consistent with Kaousar et al. (2008), who reported that computer proved to be highly effective for knowledge impartation, evaluation and application of skills on the part of students taught with computer assisted instruction method as opposed to their peers taught with face-to-face teaching method.

In the light of these findings, it appears that computer helps students to achieved higher learning outcomes, thus validating growing evidences that affirms the efficacy of computer assisted learning (CAL). Supporting these findings, Shamsideen (2015) observed that CAL is more effective than the traditional instructional method in terms of learning rate and students' achievement. This declarative finding is supported by previous studies conducted by Cotton (2002) and Ngwu (2015), who respectively found out that students taught with CAL learned faster than those instructed with face-to-face teaching method. Cotton (2002) study also reported that further showed that students taught with CAL retained what they learned more than their counterpart taught with face-to-face teaching method.

These findings are clarion call for education industry to embrace this computer age and internet-driven economy. Internet enabled computer removes the distant and time limitations associated with in-person education. Educators have to provide websites and e-libraries where students can access appropriate resources designated for their respective levels of education. Teacher can give learning projects and assignment to students to keep them occupied with learning activities for an extended time so that during virtual meeting, teachers can use interactive platforms to receive feedback from students. This implies that students should be allowed to express their views concerning their respective projects to help the teacher understand their challenges and assist them accordingly.

When students are done with their assignments and projects, they can email or post them to their teachers or present them to their teachers virtually through the agency of internet enabled computer.

### **Extent television enhance e-learning in senior secondary schools during pandemic**

This study showed that television enhanced e-learning in senior secondary schools during pandemic to a low extent. Urban teachers had stronger opinion on the extent television enhanced e-learning. The reason for these findings is because television broadcast facilitates transmission of instruction to students, so that students are instructed via interactive television broadcast with the support of backchannels (such as text messages and calls) to disseminate assignments to students during the period of pandemic. These findings agrees with Olumorin et al. (2018), who observed that TV-assisted learning enables students to imitate what their teacher taught on television, and through practice learn such skills or knowledge. Olumorin et al further observed that students learn and retain what they learnt through TV broadcast than they do in regular classroom setting. The findings of this study is consistent with Arulchelvan and Viswanathan (2008), who reported that large majority (96.31%) of the students who participated in their study had TV sets, of which 65.36% of them watched TV every day in a week. The scholars further reported that 86.64% of the respondents watched TV at their various homes, while 78.40% viewed TV for entertainment reasons. 69.91% viewed TV to be informed of current news, while

35.08% indicated that they watched TV for education reasons. In addition, 68.12% of the respondents indicated that the educational programmes were in line with instructional syllabus. These findings are consistent with Saglik and Ozturk (2001), who attributed the efficacy of television to its audio-visual ability to captivate the interest of learners, so that by retaining their attention learners may acquire good understanding of the concept understudy. The scholars further supported the findings of this study by asserting that learners are more motivated when their teacher uses examples and illustration to expatiate concepts or objects with vivid moving three-dimensional images

This study further showed that students were enthusiastic about learning via television broadcast, because audio-visual capacity of television helps learners to understand concepts faster. Furthermore, this study revealed that there was a significant difference between the mean scores of urban and rural respondents on the extent television enhance e-learning in secondary schools during pandemic. This is in agreement with Arulchelvan and Viswanathan (2008), who discovered that students who lived in urban areas watched TV more often than their counterparts in rural areas. It is therefore of no wonder that Vyas et al. (2002) observed that TV-assisted learning helps learners to develop higher cognitive functioning. Vyas et al further reported that TV-assisted learning was directly associated with higher student performance in standardized test. This may be because TV assisted learning is learning-generative and effective for learning different kinds of concepts,

objects, and things, including visible and invisible things, as three-dimensional (3D) graphics imaging can be used to highlight objects and explain them with vivid clarity. This agrees with Elliot and Lashley (2017), who observed that animated cartoons, anime and 3D graphics of plants, animals, geography and other objects can be animated to create static or moving pictures for educational purposes.

One good thing about television, especially modern ones, is their ability to record videotapes of broadcast, and this permits learners to playback the video to consolidate knowledge through practice. With proper and rich instructional design and lesson plan, the teacher can display the object of discussion intermittently on the screen while continuing his/her explanation from behind the screen. This will help the students to have a clearer look at the concerned object in order to comprehension its colour, structure and dimensions for enhanced retention.

### **Conclusion**

The importance of continued education during the period of pandemic at secondary education using e-learning resources has been investigated. Based on the findings, the study concludes that e-learning resources (such as computer and television) had limited utilization effectiveness in the conduction and transmission of instruction to students during Covid-19 pandemic.

### **Recommendations**

Based on the findings of this study, the following recommendations were made;

1. School managers should integrate e-learning to the mainstream of regular

educational system so that teaching and learning would continue seamlessly during the period of pandemic.

2. Government should equip public schools with e-learning facilities (such as computers and broadcast equipment, etc.) so that teachers can utilize them to carry out teaching and learning during Covid-19 pandemic and beyond.
3. Government should train teachers on how to utilize e-learning facilities to conduct teaching and learning remotely, as this will help teachers acquire ICT skills they require to perform teaching tasks in digital classroom environment.

## References

- Arulchelvan, S. & Viswanathan, D. (2008). Radio, television and the internet providing the right to education in India. *Asian Journal of Distance Education*, 6(1) 39 – 52
- Bergman, T., & Cheney, S. (1996). Delivering cost effective services to small and mid-sized companies: A guide for workforce and workplace development providers. <http://searcher.eric.org/ericdb/ed402481.htm>
- Burns, M. & Santally, M. (2019, November). *ICTs in secondary education in sub-Saharan Africa: policies, practices, trends, and recommendations*. Paper prepared for the mastercard foundation report, secondary education in Africa: preparing youth for the future of work. <https://mastercardfdn.org/wp-content/uploads/2019/11/ICT-in-Secondary-Education.pdf>
- Cotton, K. (2002). Computer-Assisted Instruction. School Improvement Research Series (SIRS). <http://www.nwrel.org/scpd/sirs/5/culo.html>.
- Eduard, E. & Lucian, L. D. (2020). Is Romania prepared for e-learning during the COVID-19 pandemic?. *Sustainability* 12, 5438, 1-29.
- Elliot, V. & Lashley, L. (2017). The effectiveness of Interactive Radio Instruction (IRI) within selected Primary Schools in Region Number Four (4). *Social Science Learning Education Journal* 2(8) 22-37
- Ikyumen, M.I. & Fiase, G. A. (2010). E-learning resources: availability and level of preparedness for utilization of educators in tertiary teacher educational institutions in Nigeria. *Knowledge Review*, 21(4) 91-96.
- Kaousar, T., Choudhry, B. N. & Gujjar, A. A. (2008). A comparative study to evaluate the effectiveness of computer assisted instruction (CAI) versus class room lecture (CRL) for computer science at ICS level. *The Turkish Online Journal of Educational Technology*, 7(4) 19-28
- Maduagwu, S.N; & Nworgu, U.J. (2006) *Resource allocation and management in education*. Owerri: Spring field.
- Ngwu, O. G. (2015). The effect of e-learning on secondary school students' interest in basic statistics. The international conference on e-learning in the workplace, 1-5. <https://www.icelw.org/proceedings/2015/ICELW2015/papers/Ngwu.pdf>
- Nwana, S.E. (2012). Challenges in the application of e-learning by secondary school teachers in Anambara State, *African Journal of Teacher Education* 2(1), 36-48
- Nwaneri & Ikwegbu (2017). Information and communication technology (ICT) and education. In C. Williams, J. D. Asodike & V.N. Duru. (Eds). *The teaching profession & teaching in a*

- digital world*. Pearl Publishers International LTD.
- Nwaneri & Ikwegbu (2017). Information and communication technology (ICT) and education. In C. Williams, J. D. Asodike & V.N. Duru. (Eds). *The teaching profession & teaching in a digital world*. Pearl Publishers International LTD.
- Okaz, A. A. (2015). Integrating blended learning in higher education. *Procedia - Social and Behavioral Sciences* 186, 600 – 603
- Okpechi, P.A., Denwigwe, C. P. Asuquo, P. N., Abuo, C. & Unimna, F. U (2018). Awareness and utilization of e-learning resources by trainee counsellors of counselling education in Calabar, Nigeria. *International Journal of Educational Technology and Learning*, 3(2) 45-51.
- Olaniran, S.O., Duma, M.A.N. & Nzima, D.R. (2017). Assessing the utilization level of e-learning resources among ODL based pre-service teacher trainees. *The Electronic Journal of e-Learning Volume* 15(5) 384-394
- Patrick, S., & Powell, A. (2009). A summary of research on the effectiveness of k-12 online learning: Effectiveness of online teaching and learning, iNACOL. [http://www.inacol.org/research/docs/NACOL\\_ResearchEffectiveness-Ir.pdf](http://www.inacol.org/research/docs/NACOL_ResearchEffectiveness-Ir.pdf)
- Saglik, M & Ozturk, S. (2001) Television as an educational technology: using television at Open Education Faculty, Anadolu University. *Turkish Online Journal of Distance Education-TOJDE*. 2 (1) 6-21. <https://tojde.anadolu.edu.tr/tojde3/pdf/6.pdf>
- Saglik, M & Ozturk, S. (2001) Television as an educational technology: using television at Open Education Faculty, Anadolu University. *Turkish Online Journal of Distance Education*
- TOJDE*. 2 (1) 6-21. <https://tojde.anadolu.edu.tr/tojde3/pdf/6.pdf>
- Shachar, M., & Neumann, Y., (2010). Twenty Years of Research on the Academic Performance Differences Between Traditional and Distance Learning: Summative Meta-Analysis and Trend Examination, *MERLOT Journal of Online Learning and Teaching*, 6(2). [http://jolt.merlot.org/vol6no2/shachar\\_0610.pdf](http://jolt.merlot.org/vol6no2/shachar_0610.pdf)
- Shamsideen, S.A. (2015). Effect of computer assisted learning methods on facilitating continuing education in Lagos State, Nigeria. *African Educational Research Journal*, 3(4), 204-208.
- Ukaigwe, P. C., & Igbozuruike, I. U. (2020). Planning and integration of technologies for effective implementation of blended learning in universities in Rivers State, Nigeria. *Advances in Social Sciences Research Journal*, 7(1) 452-462.
- United Nations International Children's Emergency Fund [UNICEF], (2020). Policy Brief: Education during COVID-19 and beyond. [https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg\\_policy\\_brief\\_covid19\\_and\\_education\\_august\\_2020.pdf](https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid19_and_education_august_2020.pdf)
- Usman, H. & Igbozuruike, I. U (2019). Integration of e-learning in secondary education and the imperatives of planning for sustainable improvement in students' achievement in Port-Harcourt Metropolis. *Knowledge Review*, 38 (1) 101-109.
- Vyas, R. V., Sharma, R. C., and Kumar, A. (2002). Educational radio in India. *Turkish Online Journal of Distance Education* 3(3), 46-55

World Health Organization [WHO] (2015). global task force on cholera control, prevention and control of cholera outbreaks: WHO policy and recommendations. Retrieved from <http://www.who.int/cholera/technical/prevention/control/en/index.html#>

World Health Organization [WHO], (2020). Coronavirus disease 2019 (COVID-19) situation report – 94. Retrieved from [https://www.who.int/publications-](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125)

[detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125)

Zacharia, S. & Twinomugisha, A. (2020). Educational television during COVID-19: How to start and what to consider.

<https://blogs.worldbank.org/education/educational-television-during-covid-19-how-start-and-what-consider>