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VALIDATING TEACHERS' APPLICATION OF TECHNOLOGY IN MANAGING INSTRUCTIONAL DELIVERY FOR EDUCATIONAL SUSTAINABILITY IN A SECURITY CHALLENGED ERA IN NIGERIA:

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ABSTRACT

This study investigated teachers application of technology in managing instructional delivery for educational sustainability in a security challenged era in Nigeria. The study adopted descriptive design and three research questions were raised for the study. Building on the theoretical framework of concerned based adoption model, three research questions were raised for the study. The study was conducted in Ebonyi State using senior secondary school teachers from the three education zones of the state which totalled 6,980 from which 450 teachers used for the study, were sampled via stratified random sampling technique through a multi stage procedure. The instrument for data collection was a structured questionnaire adapted from Reinhard & Banister which they developed in 2009 and which has been successfully used in similar studies of technology integration by teachers. Out of the 450 questionnaires distributed, 437 representing97.1% were returned duly completed. The data collected was analyzed using descriptive statistics of mean and standard deviation to answer the three research questions. Findings from the data analysis indicated among other things that teachers are making reasonable self efforts to improve their technology skills in order to facilitate their instructional delivery to students especially in the face of the security challenges confronting Nigeria. Based on the findings, it was recommended among other things that Government should ensure that computer facilities are adequately provided and made accessible for teachers and students use in schools.

Keywords: Technology, Instructional delivery, Educational Sustainability, Security challenge.

Introduction

On a global scale, there is a rising wave of insecurity but it does appear that Nigeria is the worst hit in this quagmire. In the last six years in particular, hardly has any single day passed without one security issue or the other. Ishaq et al (2019) have noted that the deteriorating security situation in Nigeria is indeed worrisome. The state of insecurity in Nigeria has continued to impact negatively on every facet of the society including the education sector. In most parts of the country, school gates have been closed for months to all pupils, students and teachers because of

security threats and attacks. The new waves of insecurity in Nigeria have taken an unusual and unprecedented dimension, to the extent that people who were rarely frightened are now forced to abandon their places of works, businesses and schooling. As noted by Ozoemena (2014), the critical security challenges confronting Nigeria have been identified with different names such as banditry, unknown gun men, kidnapping, Boko Haram, socio-economic agitations, boundary disputes, cultism, corruption, all manner of robbery including pen robbery, looting of the national treasury, public disorder and anarchy that go with the periodic elections, and aspects of organised criminality involving Herdsmen's brutality. The security situation in the country is having untold effect on the educational sector because while parents and guardians are no longer comfortable sending their children and wards to schools in Nigeria; teachers are not comfortable to go to work (Ihebereme etal, 2015). Safeguarding the school environment for educational activities remains paramount in all societies because without a safe school, the future of the world will be nothing but bleak. As has been reported by Ibiam (2011), the attrition rate of Nigerian pupils and students to foreign countries for schooling is daily on the increase because of the high spate of insecurity. This is dealing in no small measure a heavy blow on the educational system.

According to Ozoemena(2016), education is the instrument to help preserve and refine society so that it will be a friendly place for individual members to live and work happily in peace to ensure sustainable development, security, and stability of the nation. In the views of (Nwagboso, 2013; Mohammed, 2013), the relationship between national security and development can never be trivialized because sustainable development is a function of a peaceful environment. And sustainable development is primarily dependent on a functional educational system. With the spate of insecurity in the country and its attendant implications on education which is the spring board of socio-economic development, there is demand urgency on teachers and educational managers for a more innovative approach to managing instructional delivery in order to save the school system and the students that even when security challenges force them out of school, they could seamlessly have access to their lessons.

Considering the prevailing circumstances of insecurity and the importance of education in sustainable development, teachers' management of instructional delivery remains a major source of national concern. Evidences from research substantiate that modern classrooms laced with technological applications have high potency of facilitating teachers' instructional delivery and meeting students' learning needs. For example, (Igu et al, 2019, Cook et al,2015), affirmed that the application of technology in teaching and learning helps students to become active learners who are more able to construct knowledge. Supportively, (Uslu, 2018), maintains that technology has created new and varied methods that enhance teacher–students' interaction and reflections that support

learner-centred education far beyond the physical classroom in many ways. However, Ekwe and Udoh (2017), maintain that in order to ensure teacher effectiveness in technology integration in teaching and learning, schools should not only communicate clearly their vision for technology integration but must ensure that technology facilities and support services are readily provided for teachers and students.

In this research, the researchers made effort to define technology application as the use of technology tools like computers, videotapes, CDs, DVDs, email, World Wide Web, among others as instructional delivery devices. The importance of technology application in modern classrooms has become significant to the point that it is now an unavoidable part of teachers' classroom management strategy for effective instructional delivery. There is no gain saying the fact that teachers are the hub of the education industry. Teachers are the stake holder agents of change (Hosman, 2010) because they ensure that changes and innovations are translated from policy statements into actions. But sadly, Okonkwo et al (2015) reported that teachers are seldom given consideration due to the fact that in-service training for technology application is most often not a part of the government's budget plans. In addition, teachers are neither consulted nor considered stakeholders crucial to the successful adoption and application of technology (Hosman & Cvetanoska, 2013). Besides that modern classroom are meant to be managed through technology applications, the reality of the new normal (post COVID 19 effect) and the high incidence of insecurity in Nigeria, makes its use even more urgent and expedient. This is supported by the pool of studies that have explored the importance of technology integration in classroom management (see for example Igu et al, 2019; Ikwuegbu,et al, 2018; Nwobi, 2011). On teachers' behavioural disposition towards technology, Ogbogo (2020) found that in addition to the spectre of insecurity, the incidence of the COVID-19 new normal and the fear of replacement by ICT compliant teachers are pushing many teachers to engage in self development efforts and taking much risky behaviours to sharpen their ICT skills to be able to apply technology in the management of instructional delivery. In another study, Ukehe (2013) found that many teachers have beaten the phobia challenge to navigate into the ICT world and are now very disposed to trouble shoot on their own. Dimelu (2010) revealed that many Nigerian teachers are unable to use information communication technology for effective teaching. Independent studies by (Eze et al, 2018; Okpoku, 2015; Onwuchekwa et al, 2012) further revealed that lack of IT facilities hinder teachers from using technology in the classroom. Surprisingly, literature search showed that none of these reviewed studies was conducted in Ebonyi State to validate a measure of teachers' application of technology in instructional delivery particularly in this very challenging period in the history of Nigeria. Therefore, in order to cover this existing gap in knowledge and especially as Ebonyi is one the States in the Federation where school children have suffered a lot of

displacement and staying out of school consequent upon inter-communal clashes and herdsmen's attack, this study takes its stand on validating a measure of teachers' application of technology in the management of instructional delivery for educational sustainability in a security challenged era in Nigeria.

The theoretical framework that anchors this study on the application of technology in classroom management by teachers in a security challenged period is the Concerned Based Adoption Model (CBAM), which was developed in the 1970s by the Research and Development Centre for Teacher Education in Austin, Texas (Hall & Hord, 1987). The CBAM model has been widely adopted and validated in the academic fields of education and educational psychology sequel to its introduction. For example,(Donovan et al 2007; Hollingshead,2009; Khoboli et al 2011) have successfully applied this theory to investigate the implementation of computers in the classroom. The application of this theory in this study is germane because teachers have been recognized as the most influential factor for the successful application of technology in curriculum delivery. Teachers determine whether innovations succeed or fail. The adoption of any particular innovation is dependent on a teacher's conviction of its usefulness and need. According to (Khoboli et al,2011) , CBAM comprises two major dimensions: Stages of Concern (SoC) and Levels of Use (LoU). Stages of Concern describe the feelings and concerns expressed in regard to a need for an innovation. For example, in Nigeria today, teachers are greatly concerned about students' learning and curriculum delivery in classrooms especially as the security situation in the country continues to worsen by each passing day. This feeling of concern is prompting the need for a way out hence, the perceived usefulness of technology application. The second aspect of CBAM is the Levels of Use, which deals with how performance and activities change as the user becomes more familiar with an innovation and more skilful at using it (Loucks &Hall.1979). The awareness index of the need for the use of a particular innovation will increase the urge to gather information about such innovation and the preparation for its first and continued use. The ability to sustain technology use depends on the impact of its application on the achievement of the desired goal which in this context is instructional delivery.

Statement of the Problem

In the aftermath of the security issues in Nigeria, managing instructional delivery services becomes a challenge. This is among the most severe consequences of the present insecurity realities in Nigeria as it may lead to the deprivation of millions of children's fundamental human rights to education and place their future at risk in the areas of child labour, child trafficking, early marriage, among others and this is worrisome to the researchers. Therefore, the problem of this study, put in a question is: how could teachers' application of technology help in the management of instructional delivery for educational

sustainability in a security challenged era in Nigeria?

Research Question

Drawing from the objectives of the study, the following research questions were raised:

1. What are the risk taking behaviours that confront teachers with technology application in managing instructional delivery?
2. What are the available teachers' support accesses to technology application in managing instructional delivery?
3. How do teachers apply technology in managing instructional delivery?

Research Method

The study adopted descriptive survey design. According to(Orodho,2005), descriptive design gathers data at a particular point in time with the intension of describing the nature of the existing conditions, identifying the standards against which existing conditions can be compared to determine the relationship that exists between specific events. This study was carried out in Ebonyi State Nigeria. Ebonyi State is comprised of 13 Local Government Areas. The population of the study comprised 6,980 senior secondary school teachers in the state (SEB,2020) from which 450 teachers used for the study, were sampled using stratified random sampling technique through a multi stage procedure. This technique was used because Ebonyi State is educationally stratified into three zones of Abakaliki, Afikpo and Onueke. The first stage was using simple random sampling technique to select 20 senior secondary schools each from the three Educational Zones. This gave a total of 60 Schools. Stage two involved using the staff list for each school to know the total number of teachers each had and all the schools that did not have 25 teachers and above were dropped. This procedure resulted to 45 schools used for the study. Applying purposive sampling, all teachers who did have professional development certificate in ICT were dropped. The third stage was the use of simple random sampling technique to select 4 male and 6 female teachers from the selected schools which gave the total number of males as 180 and females as 270 and that brought the sample size to 450**.** A 30 item validated instrument developed by Reinhard & Banister (2009) was adapted and used for the study. This instrument was used because it has been validated and used widely to investigate teachers' integration of technology in classrooms. Before the administration of the instrument, the researchers obtained ethical approvals from all the institutions selected for the study. They went further to obtain informed consent from all the participants and assured them of anonymity and confidentiality. For effective administration of the questionnaire, the researchers trained five research assistants but however, they remained the overall supervisors. Out of the 450 questionnaires distributed, 437 representing97.1% were returned duly completed. The data collected was analyzed using simple descriptive statistics of mean and standard deviation to answer the three research

questions. A mean cut off point of 2.50 was used for decision making. The boundary limits of a mean response of 1.00-1.49 was considered strongly disagree (SD), 1.50-2.49 to be Disagree (D), 2.50-3.49 to be Agree (A) and 3.50-4.00 to be Strongly Agree (SA).

Presentation of Results

The results are presented in tables according to the research questions that guided the study.

Research Question 1: What are the risk taking behaviours that confront teachers with technology application in managing instructional delivery?

Table 1.Mean responses and standard deviations of the respondents on the risk taking behaviours that confront teachers with technology application in managing instructional delivery

S/N	Items	Mean	SD	Decision
1	I feel comfortable about my ability to work with computer technologies.	3.45	0.55	A
2	Learning new technologies is not confusing to me.	2.97	0.91	A
3	I am confident with my ability to troubleshoot when problems arise while using technology.	2.70	0.93	A
4	I get anxious when using technology with my students.	2.83	0.87	A
5	I get excited when I am able to show my students a new technology application or tool.	3.44	0.99	A
6	I am confident in trying to learn new technologies on my own	2.75	0.97	A
7	I enjoy finding new ways I can use with my students to apply technology in the classroom.	2.51	0.98	A
8	Learning new technologies that I can use in the classroom is important to me	3.07	0.99	A
9	Using technology to communicate with others allows me to be more effective in my job.	2.84	0.92	A
10	Computer technology allows me to create materials that enhance my teaching	2.56	0.84	A
	Grand Mean and Standard Deviation	2.91	0.89	A

Data on table 1 shows the mean responses of the respondents on the risk taking behaviours of teachers in technology use for instructional delivery. Items 1,2, 3,4, 5,6,7,8,9,10 obtained mean values of 3.45, 2.97, 2.70, 2.83, 3.44, 2.75, 2.51, 3.07, 2.84, 2.56 respectively and a grand mean of 2.91 which are above 2.50 the cut off mean set for the study. This implies that the respondents accept those item statements as teachers' risk taking behaviours in the use of technology for instructional delivery.

Research Question 2: What are teachers' support accesses to technology application in managing instructional delivery?

Table 2 Mean Responses and standard deviations of the respondents on teachers' support accesses to technology application in managing instructional delivery.

S/N	Items	Mean	SD	Decision
12	My principal encourages Staff to integrate technology in the classroom.	3.27	0.71	A
13	Technology support is available in my school to assist with troubleshooting.	2.51	0.88	A
14	A vision for technology use in our school is clearly being communicated to Staff.	3.12	0.88	A
15	My colleagues are disposed to assisting one another to integrate technology in instructional delivery	2.56	0.97	A
16	Curriculum support is available in my building to assist with technology integration ideas.	2.88	0.77	A
17	Instructor computer is available in my building to provide support for teachers.	2.22	0.86	NA
18	Computers are adequately available for use in the classrooms by teachers and students	2.17	0.82	NA
	Grand Mean and Standard Deviation	2.67	0.84	A

Data on table 2 presents the opinions of the respondents on support accesses of teachers to technology for managing instructional delivery. A quick look at the table shows that items no.12, 13, 14, 15 and 16 obtained mean values above 2.50, the cut off mean, indicating that the respondents accepted them as support accesses to technology for use in instructional delivery. Only items 17 and 18 had mean values below 2.50 meaning that they were not accepted by the respondents as support accesses of teachers to technology for instructional delivery. But with a grand mean of 2.67, it is generally accepted that teachers have support accesses to technology for instructional delivery.

Research Question 3: How do teachers apply technology in managing instructional delivery?

Table 3. Mean Responses and standard deviations of the respondents on how teachers apply technology in managing instructional delivery.

S/N	Items	Mean	SD	Dec
19	I use the computer to create instructional handouts for students	3.23	0.91	A
20	I use the Internet to gather information for lesson planning	3.04	0.88	A
21	I create electronic templates to guide students' computer use	2.82	0.94	A
22	I use spreadsheet to enter students' grade	2.57	0.96	A
23	I use a handheld device like Palm Pilot to organize information	2.81	0.87	A
24	I use spreadsheet to record students' class attendance	3.11	0.88	A
25	I use email to receive students' assignments	2.92	0.92	A
26	I use Email to communicate with parents on students' progress	2.81	0.98	A
27	I post class information (homework, products) on an electronic bulletin board	2.77	0.81	A
28	I create electronic learning centres for students	2.87	0.85	A
	Grand Mean and Standard Deviation	2.89	0.88	A

Data on table 3 show that the respondents accepted all the item statements as ways that teachers apply technology to manage instructional delivery. This is true because the item statements obtained mean values of 3.23, 3.04, 2.82, 2.57, 2.81, 3.11, 2.81, 2.77, 3.40, 2.92, 2.87 and a grand mean of 2.89 which are all above 2.50 the cut off mean set for the study.

Discussion of Findings

Table 1 shows the various risk behaviours of teachers in the use of technology for managing instructional delivery. This can be seen in the responses of the respondents that teachers: feel comfortable to work with computer technology, are not confused learning new technologies, are anxious when using new technologies, get excited when they are able to show students new technology applications, are confident in trying to learn new technologies on their own, finding new way with students to apply technology in the classroom, improving their work performance by using technology to communicate with others and create materials that enhance their teaching. This finding is in line with Ogbogo (2020), who found that the incidence of the new normal and the fear of replacement by ICT compliant teachers are pushing many teachers to engage in self development and taking much risky behaviours to sharpen their ICT skills in the application of technology for the management of instructional delivery. The respondents' opinions lend credence to Ukehe (2013) who stressed that many teachers have beaten the phobia challenge to navigate into the ICT world and are now very disposed to trouble shoot on their own.

These findings are very interesting because teachers efforts to improve themselves in the use of technology without waiting for government support shows that they have good understanding of the possibility of becoming irrelevant in the educational sector if they do not make conscious efforts to improve their technology skills for the management of instructional delivery. This is true because besides the challenges of insecurity in Nigeria now, the world is fast being led by technology in all spheres and anyone who fails to key in will suffer double jeopardy of ignorance and job loss.

The analysis of research question 2 as shown on table 2 revealed that the respondents accepted that: school principals encourage staff to integrate technology in their classrooms, technology support is available for trouble shooting, there is clearly communicated vision for technology use, and colleagues are ready to support one another to integrate technology for instructional delivery. These findings are in line with Ekwe and Udoh (2017), who stated that in order to ensure teacher effectiveness in technology integration in teaching and learning, schools should not only communicate clearly their vision for technology integration but ensure that technology support services are provided for teachers. However, the finding that instructor computer is not provided for teachers makes mockery of the said support services provided for teachers. Teachers without ICT background need instructor computer to provide theoretical and applied instruction on computer functionality. Further finding that computers are not adequately available in classrooms for students use is even more worrisome because students cannot acquire technology skills by mere theoretical learning. They need to work with computers so that learning can be activity based and learner centred.

Data analysis of research question 3 as shown on table 3 indicate that the respondents are of the opinion that teachers use different ways such as using computer to create instructional handouts for students, use internet to gather information for lesson planning, create electronic templates to guide students computer use, use spreadsheet to record attendance, use email for collection of students' assignments and to communicate with parents on students' progress. This finding supports the views of (Uslu, 2018), who had maintained that technology has created new and varied methods that enhance teacher–students' interaction and reflection that support learner-centred education far beyond the physical classroom in many ways. From another perspective, this finding is very interesting because it disagrees with the findings of Dimelu (2010) who found that many of the Nigerian teachers are unable to use information communication technology for effective teaching. This study finding has evaporated the fears created by Dimelu's finding and raises great hope that teachers' application of technology in managing instructional delivery can guaranty educational sustainability in a security challenged era in Nigeria.

Conclusion

The security situation in Nigeria is getting fiercely tense by each passing day, subjecting every sector of the society including education to sink daily in despair. A management strategy for coping with the security challenges to instructional delivery is the application technology by teachers. The findings of this study support that teachers' application of technology in managing instructional delivery can ensure educational sustainability in Nigeria. Hence, the education sectors should be structured to embrace technological innovations which should be applied in the process of teaching and learning.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Government should ensure that computer facilities are adequately provided and made accessible for teachers and students use in schools.
2. Educational Managers should create opportunities and encourage teachers' to embark on professional development programmes.
3. Regular and periodic workshops should be organized by the government to re-orientate teachers on the application of technology in instructional delivery.

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