



DETERMINATION OF FACTORS INHIBITING THE USE OF EMERGING COMPUTER TECHNOLOGIES FOR MANAGEMENT OF SECONDARY SCHOOLS IN ERA OF COVID-19 PANDEMIC IN DELTA STATE

Ifesiokwu, Carol Nneka (Mrs.)

Email: Icarolnneka@Gmail.Com; Mobile Line Number: 08037255933

Rev. Fr. Onyekwe, Emmanuel Chukwunwike

E-Mail: Revemmanony@Yahoo.Com; Mc5dominics@Gmail.Com; Mobile Line: 0803405489

&

Maha, Mark Okem

E-Mail: Okemmark@Gmail.Com; Mobile Line: 08037859624

Department of Educational Foundations

School Of Education, Federal College of Education (Technical) Asaba

PMB 1044, Asaba Delta State

ABSTRACT

This study determined factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. The study aimed at finding out how the institutional-related factors, teacher-related factors and technology-related factors inhibited the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. As such, three research purposes and questions guided the study. A descriptive survey research design was employed in the study. Population of the study entailed 471 principals and 15,531 teachers in the 471 public secondary schools in Delta State. Sample size of the study comprised a total of 1,013 participants which consisted of 236 principals and 777 teachers from 236 public secondary schools in Delta State selected at 50% and 5% respectively, using the stratified random sampling technique. Instrument for data collection was a 27-item questionnaire developed by the researchers, structured on a 4-point scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) and titled: "Factors Inhibiting Use of Emerging Computer Technologies Questionnaire (FIUECTQ). The instrument was face validated by three experts from the Department of Department of Educational Management and Foundations, and one Measurement and Evaluation experts, Delta State University, Abraka. Reliability of the research instrument was established through a pilot-test sampling 3 principals and 30 teachers from three of the public secondary schools in Edo State. Data gathered from the pilot-test conducted were analyzed using Cronbach Alpha method. This yielded coefficients' reliability values of 0.67, 0.89 and 0.74 for the three clusters which was added up to give an overall coefficient internal consistency of 0.77, showing that the questionnaire was reliable and trustworthy. Data collated were analyzed using mean statistics rated at 2.50 and standard deviation for answering the three research questions. It was discovered through the findings of the study that several institutional-related, teacher-related and technology-related factors inhibited the use of emerging technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. From these findings' recommendations were made for improvement and



among them included that the Delta State government should ensure effective implementation of ICT policy, adequate funding and provision of technological resources so as to enable schools control and combat all institutional-related factors which inhibits the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic.

Keywords: Determination, Factors, Inhibiting, Use, Emerging, Computer, Technologies, Management, Secondary Schools, Era, COVID-19, Pandemic

Introduction

Education is very crucial for human empowerment and sustainable development in every society. It is one of the important instrument for socio-economic, cultural, political, religious and environmental development in many nations like Nigeria. The Federal Republic of Nigeria (FRN, 2013) described education as an aggregate tool of empowerment for the poor, and socially marginalized groups in the Nigerian society. Education is an effective means for developing the full capacities and potentials of human resources, as well as, the development of a competent workforce through the acquisition of practical life skills relevant to the world of work. Education according to the Federal Republic of Nigeria (FRN 2013, p. xiii) is equally “an instrument per excellence for social and economic reconstruction of the nation”. Given the relevance of education in national development, the Nigerian education system has been structured into several levels in which secondary education is inclusive. Secondary education which is the main focus of this present study is vital for the promotion of a progressive and united Nigeria. Secondary education equally assists in the development of an individual into sound, patriotic and effective citizen. It inculcates appropriate skills, mental, physical and social abilities and competencies that empower the individual to live and contribute positively to the society (Federal Republic of Nigeria - FRN, 2013).

Secondary education however, prepares an individual for higher education in order to actively participate in the world of work. By offering diversified curriculum in different subject areas, secondary education provides entrepreneurial, technical and vocational job-specific skills for the differences in talents and dispositions which is necessary for agricultural, industrial, commercial and economic development (FRN, 2013). Given the important roles of secondary education towards preparing students and youths for the world of work, wealth creation and entrepreneurship in Nigeria and Delta State inclusive, it is very crucial that priority attention is paid and efforts are channeled towards effective management of secondary schools especially in this era of COVID-19 pandemic.

The era of COVID-19 pandemic initially created a lot of difficulties and confusion in the management of secondary education. The era of COVID-19 pandemic started in December, 2019 and affected schools’ operations and management, including secondary schools. The era of COVID-19 pandemic as described by Cennimo (2021) is a period of Coronavirus disease 2019 (COVID-19) and defined as illness caused by a novel coronavirus called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; formerly called 2019-nCoV), which was first identified amid an outbreak of respiratory illness cases in Wuhan City, Hubei Province, China. It was initially reported to the World Health Organization (WHO) on December



31, 2019. On January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency. On March 11, 2020, the WHO declared COVID-19 a global pandemic, its first such designation since declaring H1N1 influenza a pandemic in 2009. Illness caused by SARS-CoV-2 was termed COVID-19 by the WHO, the acronym derived from "coronavirus disease 2019" (Cennimo, 2021). The COVID-19 pandemic which went all over the world including Nigeria and Delta State grossly affected the management of many secondary schools in several ways which includes schools' lockdown, stoppage of physical teaching and learning activities in order to maintain social distancing and avoid overcrowded places, among others. Adelakun (2020) stated that efforts to curtail the spread of COVID-19 through non-medical interventions and preventive measures such as social-distancing and self-isolation prompted the widespread closure of primary, secondary, and tertiary schooling in over 100 countries. Nigeria as a country as well, through the Federal Ministry of Education, ensured that all schools and personnel experience a compulsory stay at home order so as to prevent further spread of this deadly virus from spreading among students and school personnel since it can easily be contacted through direct contact with the carrier of the virus. In fact many unified examinations have to be suspended. Therefore, in a bid to continue academic activities during the pandemic and post COVID-19 era, schools and educational institutions in the country were strongly advised and directed by the Government through the Federal Ministry of Education to use various computer technologies for management of the teaching and learning activities. A lot of private schools and private tertiary institutions who were technologically advanced keyed into this government demand while many of the public secondary schools could not key into this

process because of their poor technology base. Supporting the above statement, Agbele and Oyelade (2020) made a remark that because of the Covid19 pandemic, all public and private schools had to shut the doors of their schools following the government directives. The pandemic however, unmasked substantial inequities in the education sector. While some private schools and higher educational institutions in the urban areas engaged their students through online teaching and learning, a large number of students who were less privileged or were in rural areas were left out. Most schools lack of sufficient emerging technological facilities hindered them from partaking successfully in online teaching like they do in the developed countries (Agbele & Oyelade, 2020). The era of Covid-19 pandemic has made the management of especially public secondary schools including the ones in Delta State very difficult.

Management however entails the effective mobilization and utilization of human and material resources in the school for achievement of educational goals. Management also deals with the proper control and coordination of educational resources and getting them into working order (Akpakwu, 2012). According to Ali and Abdalla (2017), educational management is an applied field of management. One can therefore deduce that educational management refers to the application of theory and practice of management to the field of education or educational Institutions. Educational administration is a process of acquiring and allocating resources for the achievement of predetermined educational goals. Within the premise of this present study, educational management is conceived as effective utilization and harnessing of human and material resources for achievement of the goals and objectives of secondary schools in the era of COVID-19



pandemic. One of the ways in which both the human and material resources could be properly harnessed and managed in order to achieve the goals and objectives of secondary education in the era of COVID-19 pandemic is through the use of emerging computer technologies. Recently, emerging computer technologies are beginning to make significant impact in the Nigerian education sector. Many emerging computer technologies are being utilized for general administration and management of various school systems while conducting researches, organizing students' continuous assessment and examinations, data collection and supervision, writing reports and documentations, among others. Emerging computer technologies therefore according to Rotolo, Hicks and Martinrefers (2015) refers to as a radically novel and relatively fast-growing technologies characterized by a certain degree of coherence persisting over time and with the potential to exert a considerable impact on the socio-economic domain(s) which is observed in terms of the composition of actors, institutions and patterns of interactions among those, along with the associated knowledge production processes. Its most prominent impact, however, lies in the future and so in the emergence phase is still somewhat uncertain and ambiguous. Computer is therefore emerging when it is new evolving and being introduced in a system. Individuals want to utilize the latest technology because it allows them to use new products and services that older technologies do not support. For example, if an individual had a computer that was 20 years old, it would not be able to run the latest operating system, software, or games. Most companies also stop supporting older products in favour of newer products, which may leave one more vulnerable to attacks or unable to find fixes to problems (Computer Hope, 2019). Emerging computer technologies is also connected

to the use of computer devices and Internet using some wired or wireless connectivity in order to carry out an operation.

Some of the emerging computer technologies which can be utilized for effective management of secondary schools in the era of COVID-19 pandemic in Delta State includes the use of Internet via World Wide Web or WWW; electronic mails – Emails; social media technologies such as WhatsApp, zoom, videoconferencing, google classroom and google meet, Skype, Facebook, Twitter, and Instagram, etc.; Electronic-chat and messaging such as Yahoo, AOL, MSN, Google (who derive the substantial portion of their revenue from advertisers and other subscribers services) has opened up a new vista in modern communications; Internet-telephony based on Voice over Internet Protocol (VoIP) which allows making telephone calls over the Internet; Interactive Content Delivery Services such as e-learning, e-governance, e-commerce, e-dating, e-conferencing, etc. which are online services that allows people to offer and receive distant education, business transactions, meetings, news and reports, medical and other consultations; software applications like Microsoft office and computer-assisted instructions; multimedia technologies, among others (Asaolu, 2006; Todowede, 2019). There are lots of benefits and advantages in using many of these emerging computer technologies in the management of educational activities as Mustapha, Mohammed, Egigogo, Kutiriko and Dokoro (2020) opined that many diverse roles and advantages of technology in education are promising; these range from using emerging technology as a tool to support the conventional way of teaching to fully technological driven. In view of the above piece of information, many students derived gratification from the use of technology in education. It is vital to bring to light



the roles of emerging technology in education as further highlighted by Mustapha, Mohammed, Egigogo, Kutiriko and Dokoro to include that technology allows students to learn in a serene environment. It acknowledges the study of a “classroom experience” without interrupting the established measure of communication. It facilitates students thought based on strengths and weaknesses. It aids the teacher to evaluate skills in a consistent and objective manner. It authorizes the duplication of inherent classroom order of events that may be seldom faced in material life, and enables assessment of intricate to long-term classroom and synergies across-institutional, among many others. New instructional techniques that use ICTs have been found to provide a different modality of instruments that are applicable in the Nigerian educational system. For example, to the student, the ability to use ICT tends to facilitate the increased individualization of learning. Correspondingly, in schools that leverage on innovative technologies, students are enabled to gain easy access to tools that provide valuable and immediate feedback for literacy enhancement – a development which is currently found to lack full implementation in the Nigerian school system (Todowedede, 2019). Notwithstanding the crucial need and benefits of these emerging technologies in all educational institutions in the era of COVID-19 pandemic in Delta State, it has been generally observed and noticed in literature that most of the emerging computer technologies are not effectively been utilized and applied in many schools; whose ugly situation is responsible by some factors. Many public secondary schools including those in Delta State have found difficulties towards using many of these computer technologies in management of their schools. Scholars and researchers in various empirical works have identified some factors

affecting the use of computer technologies in schools. Studies like those of Agbo (2015), Buabeng-Andoh (2012), Goshit (2006), Kaku (2005), Ogundile, Bishop, Okagbue. Ogunniyi and Olanrewaju (2019), Okwudishu (2005), Todowedede (2019) and Zhao and Frank (2016) indicated that factors relating to inadequate financing and funding of education sector, non-availability of emerging technologies in schools, poor policy and project implementation strategies; policy asymmetries or incongruities; limited, out-rightly poor or non-existent information system support infrastructure; the lack of, or inadequate ICT facilities in schools; the lack of, or poor perception of ICTs among teachers and administrators; the high cost of ICT facilities; inadequate ICT-based human capital in the schools system; frequent electricity interruption; etc.

Mustapha, Mohammed, Egigogo, Kutiriko and Dokoro (2020) in their article on factors affecting the utilization and adoption of technology in education also remarked that such factors as inadequate classroom space that will accommodate a large number of computers, teachers’ distaste to take the students to computer laboratory, lack of expedient access to computers at home, inadequate infrastructure, pitiable planning, and inadequate healthy human infrastructures that sustain technology advancement in the classroom limited teachers proper application, utilization and adoption of technologies in education. Mustapha, Mohammed, Egigogo, Kutiriko and Dokoro went further to point out that a set of factors affecting the utilization of technology in education is linked with the teacher. The teachers’ thoughts on the way to and proficiency with technology have regularly been acknowledged as the key factor connected with the utilization of technology. If not a teacher cling to affirmative thoughts to technology and not expected of using it in teaching. Teacher’s



instructive attitude and teaching philosophy put into practice are in addition factors that appear to persuade the proper utilization uses of technology in education. Organizational factors relating to the management and leadership of the school also affected the use of emerging computer technologies in schools. Technology itself is also among the spring of set of factors that affect its usage by teachers. Today, some contradictory thoughts on the significant effects of technology ought to be utilized in education. This directs the teachers to a state of uncertainty regarding the apt educational ethics of technology (Mustapha, Mohammed, Egigogo, Kutiriko & Dokoro, 2020). Furthermore, the continuously varying technologies make it complex for teachers to live with the latest trends in technology. This is because, on a daily basis, new hardware and software are becoming available and the teachers find it hard and daunting to continue following this mysterious beast in technology. Thus, the nature of unpredictability makes technology less alluring for most teachers because of its undependable and can break down at any time but teachers, who have only a limited amount of time in front of students, cannot spend the time troubleshooting problems they may or may not be able to solve. Thus if not there is a strong need for the use of technology and reliable support, teachers may opt not to use it in their teaching (Mustapha, Mohammed, Egigogo, Kutiriko & Dokoro, 2020). Looking at all the above studies, the researchers in the present study are motivated to find out those institutional-related factors, teacher-related factors and technology-related factors that inhibited the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State.

Institutional-related factors as perceived within the context of this present study involve those

factors caused by the institutions or associated with management and school leadership that inhibited the use of emerging computer technologies for management of secondary schools, such as funding, facility provision and maintenance of computer technologies in the school, poor utilization of these technologies in schools especially where they are available, among others. Teacher-related factors are those problems associated with teachers themselves which inhibited the use of emerging computer technologies in the secondary school. As regards to teachers lack of knowledge and skills in the use of computer technologies, poor attitude and interest towards the use of computer technologies, teachers' preference of the traditional/conventional teaching method more than the use of technologies, among others. Technology-related factors are those problems in connection with the high cost and purchase of most these computer technologies, among others, affecting their usage in schools. Very many of these factors inhibits the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic; and the present study sought to determine the ones that mostly affected secondary schools in Delta State. From all these foregoing discussions, the present study sought to investigate and determine the factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State.

Statement of the Problem

Computer technologies are beginning to make significant impact in the Nigerian education sector including secondary schools in Delta State in this recent times. Many of these emerging computer technologies as observed in most literature which includes the use of online collaboration resources such as the internet, emails (Gmail & Yahoo mail),



Video clips, Google classroom, Google meet, Zoom and WhatsApp technologies, among others are being utilized daily in management of teaching and learning in secondary schools and beyond. Given the important and relevance of these emerging technologies in management of educational institutions in Delta State in the era of COVID-19 pandemic, yet, it has become worrisome and a matter of concern that many of the public secondary schools in this area do not make use of the emerging computer technologies to improve teaching and learning. Latest observations from the researchers' tour around many public secondary schools' showcase that most of these emerging technologies are not adequately or sufficiently and efficiently been used in the management of schools. Both the principals and teachers complained about several challenges and factors which inhibited the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. This ugly situation which seems to have worsened and prevented quality education from triumphing in the public secondary schools has become worrisome for the researchers and other education stakeholders, therefore, creating a gap which needs to be filled by the present study. But if the secondary schools in Delta State were to utilize efficiently and effectively, many of these emerging computer technologies for management of their schools, this would have improved the quality and standard of education coupled with the instructions provided in the public secondary school, thereby, enabling schools to achieve their educational goals and instructional objectives. However, the need towards determining the factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State, has become the problem of this present study.

Research Questions

The following three research questions guided the study:

1. What are the institutional-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State?
2. What are the teacher-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State?
3. The technology-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State?

Research Method

A descriptive survey research design was employed in the study. The design was employed to enable the researchers carry out a field investigation concerning the problem by raising a research instrument in order to draw samples out of the total population of principals and teachers in Delta State. Thereafter, information retrieved from the two samples were collated and analyzed using a statistical tool to reveal the findings and then, conclude the study. Population of the study entailed 471 principals and 15,531 teachers in the 471 public secondary schools in Delta State. The choice of choosing only the principals was to enable the researchers get accurate information about the problem concerning the real situation of things as they existed in the public secondary schools in Delta State. Sample size of the study comprised a total of 1,013 participants which consisted of 236 principals and 777 teachers from 236 public secondary schools in Delta State selected at 50% and 5% respectively,



using the stratified random sampling technique. To select this sample, both the public secondary school principals and teachers were stratified according to their geographical location and then, selection were randomly made at 50% and 5% respectively. This is in line with Nworgu (2015) who stated that for any study with large population, 5% to 80% is sizeable to conduct the study. Instrument for data collection was a 27-item questionnaire developed by the researchers, structured on a 4-point scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) and titled: "Factors Inhibiting Use of Emerging Computer Technologies Questionnaire (FIUECTQ). Construction of this research instrument was guided by the purpose of the study and research questions.

The instrument was face validated by three experts from the Department of Educational Management and Foundations, and one Measurement and Evaluation experts, Delta State University, Abraka. These experts made useful corrections on the questionnaire in terms of the sentence construction, suitability and clarity, which were incorporated before the final print out of the research instrument. Reliability of the research instrument was established through a pilot-test sampling 3 principals and 30 teachers from three of the public secondary schools in Edo State. Data gathered from the pilot-test conducted were analyzed using Cronbach Alpha method. This yielded coefficients' reliability values of 0.67, 0.89 and 0.74 for the three clusters which was added up to give an overall coefficient of internal consistency of 0.77, showing that the questionnaire was reliable and trustworthy. Method of data collection was

through a face to face and direct contact with the respondents engaging the services of seven research assistants. These research assistants were undergraduate students from one of the colleges of education in Delta State, who were also instructed about the purpose of the research and directed on how to collect the necessary information for the respondents concerning the study. At first, both the researchers and the research assistants met with the principals of the public secondary schools that were sampled and took permission from them in order engage the teachers to fill their own questionnaire. Moreover, all the COVID-19 protocols were duly observed during the distribution of the questionnaire which took a period of three weeks of completion. A total of 1,013 copies of the questionnaire distributed to the respondents were all collected at a 100% rate of return. Data collated were analyzed using mean statistics rated at 2.50 and standard deviation for answering the three research questions. The decision rule for taking decisions on the items on the questionnaire which was rated at 2.50 was that any mean score which rated at 2.50 and above was an indication that the respondents agree (A) with the statements. Any mean score that rated below 2.50 was an indication that the respondents disagree (D) with the statements.

Presentation of Results

Research Question 1: What are the institutional-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State?

Table 1: Mean Scores and SD of Respondents concerning the Institutional-Related Factors Inhibiting the Use of Emerging Computer Technologies for Management of Secondary Schools in Era of Covid-19 Pandemic in Delta State

N = 1,013 Respondents (236 Principals & 777 Teachers)

S/N	Please showcase your agreement concerning the institutional-related factors inhibiting the use of emerging computer technologies in your school	Principals			Teachers		
		X	SD	Decision	X	SD	Decision
1.	Leadership problems as a result of lack of interest, concern and support towards encouraging the use of technologies in school	3.22	0.83	Agree	2.83	1.01	Agree
2.	Inadequate sourcing or provision of appropriate technological facility and infrastructure in school by leadership	3.41	0.74	Agree	3.14	1.09	Agree
3.	Inadequate funding which affects the consistency in the use of emerging technologies in school	3.05	0.94	Agree	2.88	1.05	Agree
4.	Under-utilization of most of these technologies even when they are available in school	2.94	0.99	Agree	3.02	1.00	Agree
5.	School management timetable arrangement which discourages the use of emerging technologies	1.77	0.83	Disagree	2.02	0.97	Disagree
6.	Poor maintenance culture of available technologies by school management	2.95	0.93	Agree	2.63	1.11	Agree
7.	Inadequate energy or power supply to use the emerging technologies in school	2.82	0.94	Agree	3.14	0.98	Agree
8.	Non-availability, shortage or limited access of technological infrastructure or equipment that would support the use of emerging technologies in school	3.30	0.75	Agree	2.85	0.91	Agree
9.	School location, preventing most schools in the rural or riverine areas from using most of emerging technologies	2.83	1.11	Agree	2.74	1.15	Agree
10.	Poor adoption of ICT policy to encourage the use of emerging technologies in schools	3.20	0.90	Agree	3.24	0.93	Agree
11.	Lack of suitable educational software in school	2.95	1.10	Agree	2.77	0.98	Agree
12.	Unconduciveness or poor atmospheric conditions of the school environment which makes difficult for the use of emerging technologies	3.11	1.07	Agree	3.25	0.92	Agree
Overall Mean Score & SD =		2.96	1.02	Agree	2.88	1.06	Agree

Analysis of results in Table 1 from both the principals and teachers' responses showed that items 1 to 4 and 6 to 12 were all rated above 2.50 of the acceptable mean score by the principals and teachers to show that they agreed with all these statements. Only item 5 was rated below 2.50 by the principals and teachers to show that they disagreed with this statement. The grand mean of 2.96 with standard deviation of 1.02 of the principals and 2.88 with

standard deviation of 1.06 of the teachers indicated that majority of the principals and teachers reacted positively in support of the statements whose mean score responses were closely related. This result further revealed all the institutional-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State.



Research Question 2: What are the teacher-related factors inhibiting the use of emerging computer

technologies for management of secondary schools in era of COVID-19 pandemic in Delta State?

Table 2: Mean Scores and SD of Respondents concerning the Teacher-Related Factors Inhibiting the Use of Emerging Computer Technologies for Management of Secondary Schools in Era of Covid-19 Pandemic in Delta State

N = 1,013 Respondents (236 Principals & 777 Teachers)

S/N	Please showcase your agreement concerning the teacher-related factors inhibiting the use of emerging computer technologies in your school	Principals			Teachers		
		X	SD	Decision	X	SD	Decision
13.	Teachers poor awareness of the emerging technologies useful in teaching	3.28	0.82	Agree	2.86	1.00	Agree
14.	Teachers incompetency, poor skills coupled with their low knowledge towards the use of emerging technologies	3.13	0.86	Agree	3.20	1.03	Agree
15.	Teachers preference of the old 'chalk and talk' teaching method which results into lack of interest over the use of emerging technologies in teaching	3.30	0.95	Agree	2.08	0.96	Disagree
16.	Teachers sees the use of emerging technologies as waste of time in delivering lesson in school	3.01	0.91	Agree	2.10	1.08	Disagree
17.	Inadequate ICT training and retraining programmes organized for teachers on the use of emerging technologies in school	3.35	0.89	Agree	3.25	0.88	Agree
18.	Teacher personal characteristics such as age, gender or sex which negatively affects the use of emerging technologies in school	3.19	0.92	Agree	2.89	0.92	Agree
19.	Teachers fear and anxiety over the use of emerging technologies in school	1.64	0.92	Disagree	1.81	0.91	Disagree
20.	Poor students interest which discourages teachers to use emerging technologies in school	1.78	1.02	Disagree	1.77	0.89	Disagree
Overall Mean Score & SD =		2.83	1.13	Agree	2.50	1.12	Agree

Analysis of results in Table 2 from both respondents responses showed that items 13, 14, 17 and 18 were rated above 2.50 of the acceptable mean score by the principals and teachers to show that they agreed with all these statements. Only items 19 and 20 were rated below 2.50 by the principals and teachers to show that they disagreed with this statement. More so, the principals rated items 15 and 16 above 2.50 of the acceptable mean score; while the teachers rated the same items (15 & 16) below 2.50 of the acceptable mean score. The grand mean of 2.83 with standard deviation of 1.13 of the principals and 2.50 with standard deviation of 1.12 of the teachers indicated

that majority of the principals and teachers reacted positively in support of the statements whose mean score responses were closely related. This result further revealed all the teacher-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State.

Research Question 3: What are the technology-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State?

Table 3: Mean Scores and SD of Respondents concerning the Technology-Related Factors Inhibiting the Use of Emerging Computer Technologies for Management of Secondary Schools in Era of Covid-19 Pandemic in Delta State

N = 1,013 Respondents (236 Principals & 777 Teachers)

S/ N	Please showcase your agreement concerning the technology-related factors inhibiting the use of emerging computer technologies in your school	Principals			Teachers		
		X	SD	Decision	X	SD	Decision
21.	High cost of the emerging technologies which affects their purchases for the school	2.93	0.98	Agree	3.19	0.89	Agree
22.	Poor upgrading or recycling of most of these emerging technologies affecting their functionality and performance when used in school	2.54	1.07	Agree	2.95	0.98	Agree
23.	ICT connectivity problems affecting the use of emerging technologies in school	2.80	1.14	Agree	2.91	1.13	Agree
24.	Lack of Local Area Network (LAN) or broadband in school affecting the use of technologies	2.73	1.04	Agree	2.85	1.12	Agree
25.	Sudden breakdown of a computer which causes interruption in the use of emerging technologies in school	2.80	1.11	Agree	2.80	0.94	Agree
26.	Constant changing nature of technology makes it difficult for both teachers and the school to stay current with the latest technology	3.16	0.93	Agree	2.78	1.11	Agree
27.	Constant introduction of new software and hardware which makes it difficult for the school to utilize emerging technologies	3.11	0.95	Agree	2.68	1.10	Agree
Overall Mean Score & SD =		2.87	1.06	Agree	2.88	1.05	Agree

Analysis of results in Table 3 from both the principals and teachers' responses showed that items 21 to 27 were rated above 2.50 of the acceptable mean score by the principals and teachers to show that they agreed with all these statements. None of the items were rated below 2.50 by the principals and teachers to show that they disagreed with this statement. The grand mean of 2.87 with standard deviation of 1.06 of the principals and 2.88 with standard deviation of 1.05 of the teachers indicated that majority of the principals and teachers reacted positively in support of the statements whose mean score responses were closely related. This result further revealed all the technology-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State.

Discussion of Findings

Generally, the findings of this study revealed that several institutional-related, teacher-related and technology-related factors inhibited the use of emerging technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. The finding of the study indicated all the institutional-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. They include such factors as: leadership problems as a result of lack of interest, concern and support towards encouraging the use of technologies in school; inadequate sourcing or provision of appropriate technological facility and infrastructure in school by leadership; inadequate funding which



affects the consistency in the use of emerging technologies in school; under-utilization of most of these technologies even when they are available in school; poor maintenance culture of available technologies by school management; inadequate energy or power supply to use the emerging technologies in school; non-availability, shortage or limited access of technological infrastructure or equipment that would support the use of emerging technologies in school; school location, preventing most schools in the rural or riverine areas from using most of emerging technologies; poor adoption of ICT policy to encourage the use of emerging technologies in schools; lack of suitable educational software in school; and unconduciveness or poor atmospheric conditions of the school environment which makes difficult for the use of emerging technologies. This finding agrees with Okwudishu (2005) study which had found out that the non-availability of some ICT equipment in the schools often adversely affected the uses of ICTs by teachers. Thus, the dearth or sometimes total lack of ICT equipment in the generality of Nigerian secondary schools has often compelled interested students to patronize commercial cybercafés for the required Internet access and interface – especially, giving the contemporary demands and circumstances of the 21st Century. In another vein, Okwudishu (2005) study discovered that the dearth of the required baseline support infrastructure, including energy supply systems, to power continuous institutional technology applications, is another major general constraining challenge to the widespread and effective uses of ICTs for the required technological support of educational delivery. The glossary of structural challenges, as empirically aggregated through field research, includes the following: limited, or poor, information infrastructure; poor ICT policy/project

implementation strategy; poor information infrastructure; the continuing widespread ignorance and misconception about ICTs amongst Nigerians; inadequate ICT-based human capital in the schools; the lack of, or inadequate ICT facilities in schools; non-availability of some ICT components in the schools; insufficient numbers of computers and peripheral devices; high cost of ICT facilities; the experience ICT connectivity problems; frequent electricity interruption; the existence of vast areas not covered by telecommunication services; outright under-funding of education; and electricity failures (Okwudishu, 2005; Todowede, 2019).

The present study finding is likewise similar to Chigona and Chigona (2010) study cited in Buabeng-Andoh (2012) which employed qualitative approach to collect and analyze empirical data on factors preventing teachers from using ICT in teaching in Khanya schools in South Africa. The study revealed that inadequate training, lack of access to computer laboratories, lack of technical support and inadequate technology resources were factors discouraging teachers from implementing ICT into their teaching. The present study finding is equally in line with Goshit (2006) study which indicated that although efforts have been made to ensure that ICTs are available and used in Nigerian secondary schools, the level of coverage is seemingly still quite low. Goshit study further discovered that most schools, both private and government, do not offer ICT training programmes. And, by the assessment of NEPAD, the rating of the level of students' experience with ICTs on the African continent as well as their proficiency in using them is also very low. More specifically, 55% of students within the continent, including Nigeria, Algeria, Burkina Faso, Cameroon, Republic of Congo, Egypt, Gabon, Lesotho, Mali, Mauritius, Mozambique, Rwanda, Senegal, South Africa, and



Uganda (who participated in the first phase of the NEPAD e-Schools initiative), expressed that they had practically no experience in the use of computers. Other findings included that the typical African school environment provides neither opportunity nor training in the use of ICTs, and that 75% of the surveyed teachers expressed possession of no or very little experience and expertise in the application of ICT for educational purposes. It was further discovered through the finding that school management timetable arrangement was not a factor discouraging the use of emerging technologies in schools. This finding negates and contradicts the study findings like those of Buabeng-Andoh (2012) which indicated that the timetable arrangement and workloads affected the use of technologies in the classroom. From this present study, it can be deduced that institutional-related factors were among the factors that inhibited the use of emerging technologies in schools. Therefore, access to ICT infrastructure and resources in secondary schools is a necessary condition to the integration of emerging technologies in education. Effective adoption and integration of emerging technologies into schools' management depends mainly on the availability and accessibility of emerging technology resources such as hardware, software, etc. Obviously, if teachers and other school personnel cannot access the emerging technologies, then they will not use them. Therefore, access to emerging technologies, updated software and hardware are key elements to successful adoption and integration of emerging technologies in schools.

The finding of this present study also revealed all the teacher-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. This finding indicated the following teacher-related factors which inhibited

the use of emerging technologies as; teachers poor awareness of the emerging technologies useful in teaching, teachers incompetency, poor skills coupled with their low knowledge towards the use of emerging technologies, teachers preference of the old 'chalk and talk' teaching method which results into lack of interest over the use of emerging technologies in teaching, teachers saw the use of emerging technologies as waste of time in delivering lesson in school, inadequate ICT training and retraining programmes organized for teachers on the use of emerging technologies in school, teacher personal characteristics such as age, gender or sex which negatively affects the use of emerging technologies in school, teachers fear and anxiety over the use of emerging technologies in school. This finding corroborates and agrees with the studies of Kaku (2005) and Okwudishu (2005) which found out that the lack of robust search skills and access points in the schools were discovered as compounding factors and barriers to the free usage of the Internet by secondary school teachers.

The finding of this present study also concurs with Buabeng-Andoh (2012) study which found out teacher-level, school-level and system-level factors that prevent teachers from ICT use are reviewed. These barriers include lack of teacher ICT skills; lack of teacher competence; lack of teacher experience; lack of teacher confidence; lack of pedagogical teacher training; lack of suitable educational software; limited access to ICT; rigid structure of traditional education systems; restrictive curricula, etc. Personal characteristics such as educational level, age, gender, educational experience, experience with the computer for educational purpose and attitude towards computers influenced the adoption of a technology. Teachers are implored to adopt and integrate ICT into teaching and learning activities, but teachers'



preparedness to integrate ICT into teaching determines the effectiveness of the technology and not by its sheer existence in the classroom. The attitudes of teachers towards technology greatly influence their adoption and integration of computers into their teaching. According to the finding of Russell and Bradley (1997) study cited in Buabeng-Andoh (2012), anxiety, lack of confidence and competence and fear often implies ICT takes a back seat to conventional learning mechanisms. Therefore, an understanding of personal characteristics that influence teachers' adoption and integration of ICT into teaching is relevant (Buabeng-Andoh, 2012). To successfully initiate and implement educational technology in school's program depends strongly on the teachers' support and attitudes. It is believed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the technology into their teaching and learning. Among the factors that influence successful integration of ICT into teaching are teachers' attitudes and beliefs towards technology. If teachers' attitudes are positive toward the use of educational technology, then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning processes. Demici (2009) study cited in Buabeng-Andoh (2012) revealed that though barriers such as lack of hardware and software existed, teachers' positive attitudes towards GIS was an important determinant to the successful integration of GIS into geography lessons. In a similar study, Teo (2008) conducted a survey on pre-service teachers' attitudes towards computer use in Singapore. A sample of 139 pre-service teachers was assessed for their computer attitudes using questionnaire with four factors: affect (liking), perceived usefulness, perceived control, and behavioural intention to use the computer. He

found that teachers were more positive about their attitude towards computers and intention to use computer than their perceptions of the usefulness of the computer and their control of the computer. Drent and Meelissen (2008) study cited in Buabeng-Andoh (2012) conducted a study about factors which influence the innovative use of ICT by teacher educators in the Netherlands. Their study revealed that student-oriented pedagogical approach, positive attitude towards computers, computer experience, and personal entrepreneurship of the teacher educator have a direct positive influence on the innovative use of ICT by the teacher. Research has shown that teachers' attitudes towards technology influence their acceptance of the usefulness of technology and its integration into teaching. Teachers' computer experience relates positively to their computer attitudes. The more experience teachers have with computers, the more likely that they will show positive attitudes towards computers. Positive computer attitudes are expected to foster computer integration in the classroom (Buabeng-Andoh, 2012).

Todowede (2019) study confirmed that the teacher-related challenges of continuous workforce training affected the use of technology in schools coupled with the lack of/poor perception of ICTs among teachers and administrators; and the perception of information technology as a hurdle. It was further discovered that teacher-related factor such as poor students interest towards use emerging technologies in school was not a factor that inhibited the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. This fact still remains that students of this 21st century technological age prefer using some of these emerging technologies in executing their functions and task. Therefore, the use of emerging technologies to them in school is a



welcomed development for students. But this finding negates and is not in line with Ogundile, Bishop, Okagbue, Ogunniyi and Olanrewaju (2019) study which found out that students seem not to be frequent users of ICT and most of the students have not been trained and equipped with the necessary ICT skills that will enable them to be able to use them effectively. This finding also contradicts the finding of Agbo (2015) study which found out students' attitude towards computer usage and like of parents and community support affects the use of emerging technologies in schools in Ohaukwu Local Government Area of Ebonyi State.

It was further found out through the finding of this present study, all the technology-related factors inhibiting the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. This technology-related factors include the following; high cost of the emerging technologies which affects their purchases for the school; poor upgrading or recycling of most of these emerging technologies affecting their functionality and performance when used in school; ICT connectivity problems affecting the use of emerging technologies in school; Lack of Local Area Network (LAN) or broadband in school affecting the use of technologies; sudden breakdown of a computer which causes interruption in the use of emerging technologies in school; constant changing nature of technology makes it difficult for both teachers and the school to stay current with the latest technology; and constant introduction of new software and hardware which makes it difficult for the school to utilize emerging technologies. This finding agrees with Buabeng-Andoh (2012) which found out that institutional and technological factors encouraged teachers' use of computer technology in teaching and learning processes. Zhao and Frank (2016) found out in their study that the constant

changing nature of technologies including constant changes in new software and hardware which needs upgrading by the school negatively affects the use of technologies in school. Agbo (2015) found out that the level of accessibility and cost of ICT equipment affected its usage in the school. Jones (2004) study cited in Buabeng-Andoh (2012) reported that the breakdown of a computer causes interruptions and if there is lack of technical assistance, then it is likely that the regular repairs of the computer will not be carried out resulting in teachers not using computers in teaching. The effect is that teachers will be discouraged from using computers because of fear of equipment failure since no one would give them technical support in case there is technical problem.

Becta (2004) study also cited in Buabeng-Andoh (2012) agreed that "if there is a lack of technical support available in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in a higher risk of technical breakdowns" (p.16). In Ireland, the National Council for Technology in Education, NCTE 2005 census on ICT infrastructure (as cited in ICT strategy group report, 2008-2013) found that about 85.3% of schools reported technical support and maintenance as a 'high' or 'very high' priority and claimed that it should be an important element of the school ICT environment with proper technical support being made available to maintain hardware and infrastructure. Similarly, Yilmaz, (2011) cited in Buabeng-Andoh (2012) study, in assessing the technology integration processes in the Turkish education system reported that in providing schools with hardware and internet connections, it is also crucial to provide the schools with technical support with regard to repair and maintenance for the continued use of ICT in schools. Therefore, if there is no technical support for teachers, they become frustrated resulting in their unwillingness to use ICT.



Even though, lack of technical support discourages teachers from adopting and integrating technology in classrooms, a study by (Korte & Husing, 2007) equally cited in Buabeng-Andoh (2012) study revealed that schools in Britain and the Netherlands have appreciated the significance of technical support to help teachers to integrate technology into their teaching. They argued that ICT support in schools' influence teachers to apply ICT in classrooms without wasting time troubleshooting hardware and software problems.

Conclusion

The significant roles and benefits of emerging computer technologies in the management of any education system like the secondary schools can never be overemphasized. This is so because every technology when deployed into the school system has useful benefits towards promoting efficient school management for quality learning and quality outcomes. Notwithstanding the advantages of emerging technologies in education, yet, many secondary schools in Delta State have failed to use these technologies, which is owing to several factors. The consistency in the use of emerging technologies is mostly inhibited by several factors. The present study however, discovered most of the institutional-related, teacher-related and technology-related factors inhibited the use of emerging technologies for management of secondary schools in era of COVID-19 pandemic in Delta State. For appropriate incorporation of emerging technologies, all these factors must be taken care of and effectively handled. It is therefore upon this benchmark that recommendations were proffered.

Recommendations

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

1. Delta State government should ensure effective implementation of ICT policy, adequate funding and provision of technological resources so as to enable schools control and combat all institutional-related factors which inhibits the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic.
2. Opportunities for adequate computer education together constant training and retraining programmes should be provided for teachers in order to tackle all teacher-related factors which inhibits the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State.
3. Delta State Post Primary Education Board (PPEB) in joint efforts with the principals and teachers should apply effective strategies that will assist to curb all technology-related factors which inhibits the use of emerging computer technologies for management of secondary schools in era of COVID-19 pandemic in Delta State.

References

- Adelakun, I.S. (2020). *Coronavirus (COVID-19) and Nigerian education system: Impacts, management, responses, and way forward*. Retrieved from <https://www.researchgate.net/publication/344115847>.
- Agbele, A.T. & Oyelade, E.A. (2020). Impact of COVID-19 on the Nigerian educational system: Strengths and challenges of online/virtual education. *Asian Journal of Education and Social Studies* 13 (1), 26-35. Retrieved from [t: https://www.researchgate.net/publication/pdf](https://www.researchgate.net/publication/pdf).



- Agbo, I.S. (2015). Factors influencing the use of information and communication technology (ict) in teaching and learning computer studies in Ohaukwu Local Government Area of Ebonyi State-Nigeria. *Journal of Education and Practice* 6 (7), 71-86. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1083136.pdf>.
- Akpakwu, S.O. (2012). *Educational management: Theory and practice*. Makurdi: Destiny Ventures.
- Asaolu, O.S. (2006). *On the emergence of new computer technologies. educational technology & society*, 9 (1), 335-343. Retrieved from <https://www.researchgate.net/publication/220374546>.
- Ali, I.A. & Abdalla, M.S. (2017). *Educational management, educational administration and educational leadership: Definitions and general concepts*. Retrieved from: <https://www.researchgate.net/>.
- Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 8 (1), 136-155.
- Cennimo, D.J. (2021). *Coronavirus disease 2019 (COVID-19)*. Retrieved from <https://emedicine.medscape.com/article/2500114-overview>.
- Computer Hope (2019). *Technology*. Retrieved from <https://www.computerhope.com/jargon/t/technology.htm>.
- Federal Republic of Nigeria (2013). *National policy on education, 6th edition*. Lagos: Nigerian Educational Research & Development Council.
- Goshit, T. (2006). *Nigeria's need for ICT: SP. 259 technology and policy in Africa*. Retrieved from <http://ocw.mit.edu/NR/rdonlyres/Special-Programs/goshit.pdf>.
- Kaku, F.A. (2005). The use of Internet by secondary school teachers in the rural areas of Delta State: The case of Udu Local Government Area. *Unpublished B.Sc. (LIS) project*. Submitted to the Delta State University, Abraka.
- Mustapha, A., Mohammed, A., Egigogo, A.R., Kutiriko, A.A. & Dokoro, A.H. (2020). *Factors affecting the utilization and adoption of technology in education*. Retrieved from <https://www.intechopen.com>.
- Nworgu, B.G. (2015). *Educational research. Basic issues and methodology*. Enugu: University Trust Publishers.
- Okwudishu, C.H. (2005). Awareness and use of information and communication technology (ICT) among village secondary school teachers in Aniocha South Local Government Area of Delta State. *Unpublished B.Sc. (LIS) project*. Submitted to the Delta State University, Abraka.
- Ogundile, O.P., Bishop, S.A., Okagbue, H.I., Ogunniyi, P.O. & Olanrewaju, A.M. (2019). *Factors influencing ICT adoption in some selected secondary schools in Ogun State, Nigeria*. Retrieved from <https://www.researchgate.net/publication/333486743>.
- Rotolo, D., Hicks, D. & Martinrefers, B.R. (2015). *What is an emerging technology?* Retrieved from t: <https://www.researchgate.net/publication/272164853>.
- Todowede, B.J. (2019). Applying technology to educational delivery and its management: Lesson from Nigeria. Retrieved from <http://ieomsociety.org/ieomdetroit/pdfs/19.pdf>.
- Zhao, Y. & Frank, K.E. (2016). Factors affecting technology uses in schools: An ecological perspective. Retrieved from <https://www.researchgate.net/>.