PERCEPTION OF SCHOOL TEACHERS TOWARDS INTEGRATING ICT IN SENIOR SECONDARY SCHOOL CURRICULUM: AFTERMATH OF COVID-19 PANDEMIC

OFOEGBU JUDE UZODINMA, ABANG KINGSLEY, EKARIKA, CATHERINE BONIFACE AND NONSO N. BISONG

ABSTRACT

The study is aimed at determining the perception of school teachers' towards integrating ICT in senior secondary school curriculum content delivery, aftermath of Covid-19 pandemic. The study adopted a survey research. The Population of the study consisted of all 310 Senior Secondary School teachers (78 males and 132 females) in Owerri municipal Council of Imo state. The sampling technique used is purposive since the population is small. The researchers designed an assessment questionnaire which was used for data collection. It has a reliability co-efficient of 0.83 determined through cronbach alpha. The data collected was analyzed using mean and standard deviation in answering the research questions while the hypothesis was analyzed using independent t-test analysis tested at 0.05 level of significance. The result of the study showed that senior secondary school teachers have positive perception towards integrating ICT in senior secondary school curriculum content. It was therefore recommended among others that the government should speed up the expansion of its existing ICT and remote learning capacity in senior secondary school curriculum, especially for learners with disabilities who may need access to assistive technology. This is based on the fact that senior secondary school teachers have positive perception on the workability of ICT integrated curriculum in senior secondary school.

KEYWORDS: Teachers perception, ICT, Curriculum delivery, Covid-19 pandemic

INTRODUCTION

The Covid-19 pandemic is not restricted to the national borders. It has affected people irrespective of race, level of education, income or gender.

The lockdowns in response to Covid-19 have interrupted traditional schooling with nationwide school closures in most countries of the word, Nigeria inclusive. In Nigeria, the educational community has made determined efforts to

Ofoegbu Jude Uzodinma, Department of Educational Foundations, Faculty of Education, University of Calabar, Calabar

Abang Kingsley, Department of Educational Foundations, Faculty of Education, University of Calabar, Calabar

Ekarika, Catherine Boniface, Department of Educational Foundations, Faculty of Education, University of Calabar, Calabar

Nonso N. Bisong, Department of Educational Foundations, Faculty of Education, University of Calabar, Calabar

maintain learning continuity during this period, pupils and students have had to rely more on different types of resources to continue learning distantly through the Internet, television or radio. This is not with its attendant challenges which include among others: access to effective infrastructure and technology, affordable and accessible electricity and connectivity, access to appropriate ICT devices, good learning environment at home, access to learning materials and an appropriate curriculum, capacity building, personal development and training (EdTeachHub, 2020).

The implementation of school curriculum rest exclusively on the shoulder of the classroom teacher, who, in this circumstance is someone who facilities others to gain comprehension, skills, capabilities or standards set to be achieved by the school (Anagbogu, G. E. et al, 2021). The major problem is lack of appropriate curriculum content that integrate ICT in its curriculum content and pedagogy. Also is the lack of competence and confidence on the part of the teacher to competently and effectively use appropriate ICT tools in curriculum content delivery.

Anagbogu, G. E. et al (2021) posited that effectiveness in curriculum implementation denotes the ability of the classroom teacher to evade wastefulness of materials, efforts, zeal, finances and time in doing incredibleness aimed at producing a desired school outcome. This may be attributed to the fact that teachers had to adapt to new pedagogical concepts and modes of delivery of teaching, for which they may not have been specially trained to handle distance learning. Again, efficiency particularly entails the ability of a particular application or attempt to produce a desired outcome with little or no amount of wastage, expenses or unwanted effort (Anagbogu, G. E. et al, 2021).

During the pandemic, distance learning became the medium for education but the openings that digital technologies offer go well beyond a makeshift solution during this crisis. Digital technology offers entirely new responses to the question of what people learn, how they learn, and where and when they learn. Information and communication technology (ICT) can enable teachers and students to access specialized materials outside textbooks, in different setups and in methods that can link time and space. (EdTechHub, 2020). As distance learning requires appropriate material design, a system

for material distribution and returning of tasks, and a system for monitoring learning, management and mentoring skills. These are different from the skills required of a teacher with a class full of students. Based on the current realities it becomes imperative to integrate ICT in senior secondary school curriculum content and pedagogy because it is a bedrock for effective and functional curriculum content that will navigate between distance education and actual traditional schooling. Integrating ICT in senior secondary school curriculum will help make the curriculum content and other curriculum elements to adjust and adopt the format for both distance education and actual conventional schooling.

Covid-19 pandemic had made it imperative to improve education quality in line with the reality at hand. This task is not simple. It requires a consented multiple educational effort and practices, including teaching methods, infrastructure, policy-making, and financial and technical support from government. Among these teachers are one of the most vital factors. They are the ones who will blend all the educational components together and help to create enabling environments for teaching and learning (Bandura, 1993; Harding, 2012). This shows that the teacher's sills have a lot to with the success or failure of any educational innovation or change. The Covid-19 pandemic which brought new realities into the educational delivery of which distance learning through integrating ICT in curriculum content and pedagogy became the major prospect in this new reality. Teachers are crucial in using ICT in curriculum content delivery, both distantly and in conventional classroom; Kalu-Uche and Akanwa (2016), Adebanyo (2012) and Emeje and Ugwuanyi, (2008) argued that when teachers use ICT in their teaching, they attract students to use ICT in their learning activities. Also, integrating ICT in curriculum will make learning collaborative, interesting and inclusive. It will also bridge time and space as students can learn online from their different homes and at any time and place. Using ICT tools however, require a certain level of ICT skills obtained through training and self-learning.

Bransford, Brown and Cockings (2015) define the term perception as attitudes, behaviours, self-beliefs and views that a person has developed towards anything. Teachers' perceptions explain the beliefs that teachers have about the importance of integrating ICT into teaching and learning, and the perceived obstacles that are

associated with using ICT in education aftermath of this Covid-19 pandemic (Bingimals, 2018). Furthermore, teachers' perceptions in using ICT can tell about the teachers' beliefs, including their self-efficacy on ICT usage into teaching and learning. According to Wang (2002), the teacher's perception on the use of ICT can be explained as the way in which teachers' regard, understand and interpret the use of technology in teaching and learning.

Teachers' perceptions are critical to the success or failure of ICT integration in education especially in the aftermath of the Covid-19 pandemic. As alternative means of sustaining education that is online based, is being encouraged in other to observe Covid-19 protective protocol (Apeanti, 2014). For this reason, it is vital that researchers gather information about the apprehensions teachers hold regarding the use of ICT in curriculum content pedagogy. The decisions regarding whether or how to use ICT in education rests on the shoulders of the classroom or subject teachers. It on this bases that the researchers investigate the teachers' perception towards integrating ICT in senior secondary school curriculum in the aftermath of Covid19 Pandemic. This work is hinged on Davis, Bagozzi and Warshaw (1989) Technology Acceptance Model as cited by Ghavifekr, Kunjappan, Ramasamy, & Anthony (2016). This theory tries to identify variables that can facilitate the acceptance of technology by individuals, like positive perception of the usefulness of technology could make individuals to accept ICT integration in their career. Later, Venkatesh and Davis (2000) modified the variables to reflect the result of their investigation on the reasons why some people use computers and their attitudes towards them. They named came out with the Technology Acceptance Model (TAM) which links the perceived usefulness and the ease of use, with attitude towards using ICT and actual use of ICT itself.
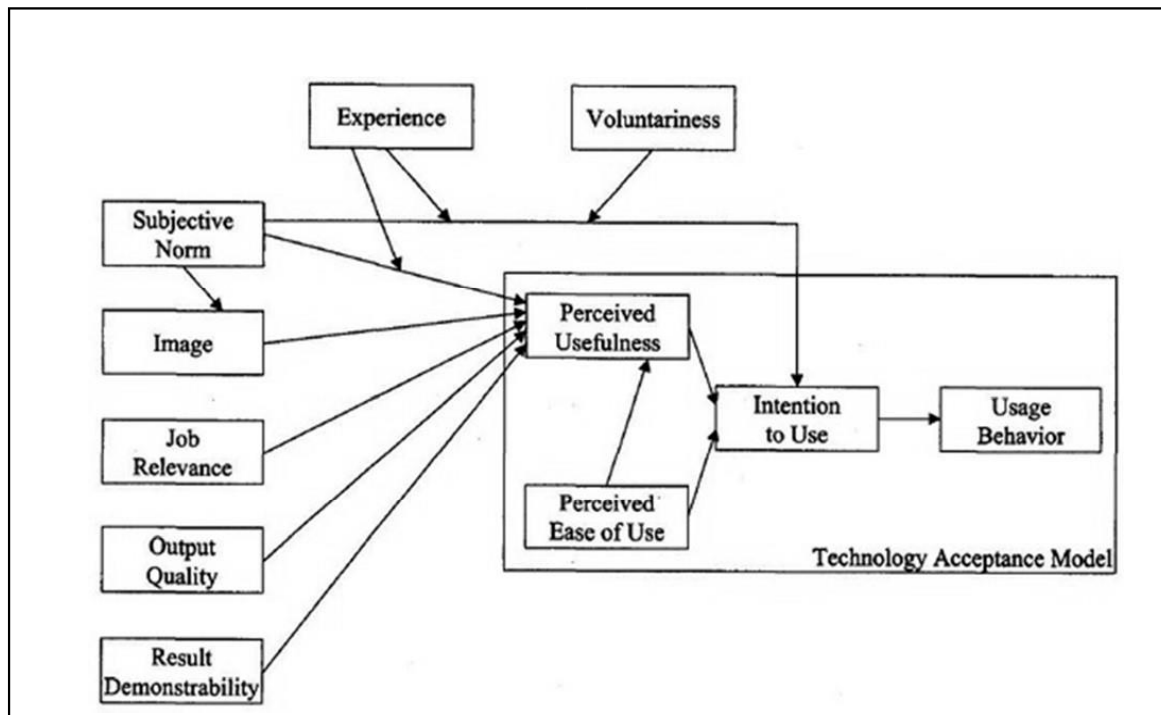

Figure 1. Technology Acceptance Model.
Source: Eke Eke (2020), Journal of Curriculum Studies.

The reality of the Covid-19 pandemic, has made the use of ICT in education among secondary school teachers in Nigeria imperative. This is because of its countless capabilities to sustain continuous education practices in the delivery of curriculum content and pedagogy at both the distance learning and in conventional classroom. For example, ICT can contribute to improve access and equity in education through distance learning especially aftermath of the Covid-19 pandemic realities, teachers' professional development, and efficient administrative management (EduTechHub, 2020). One of the important roles and expectations of ICT integrated education is to improve quality of learning and teaching (Hepp, Hinostroza, Laval, & Rehbein, 2004). Although the degree of positive impact of ICT integrated curriculum may vary in different contexts, a number of studies support the positive relationship between ICT integrated curriculum and quality of education (Hepp, et al., 2004). For example, a study found that the teachers' openness to change, especially in the careful planning on the teacher's role using ICT, influence students' learning both in content acquisitions and critical thinking skills (Baylor & Ritchie, 2001). Integrating ICT in education is especially important for low-Income and isolated rural schools since it can enhance their learning tools and resources, as well as it enables students to connect to outside community (Hepp, et al., 2004). It is on this bases that the researchers investigated teachers' perception towards integrating ICT in senior secondary school curriculum: aftermath of Covid19 Pandemic.

PURPOSE OF THE STUDY

The main purpose of the study is to determine teachers' perception towards integrating ICT in senior secondary school curriculum: aftermath of Covid19 Pandemic. Specifically, the study seeks to find out if there are differences between male and female senior secondary school teachers' perception towards integrating ICT in senior secondary school curriculum in the aftermath of Covid19 Pandemic.

The following Research Questions were posed:
1.   What is the perception of senior secondary school teachers towards integrating ICT in senior secondary school curriculum in the aftermath of Covid-19 pandemic?
2.   What is the difference between the perception of male and female senior secondary
3.   school teachers towards integrating ICT in senior secondary school curriculum in the aftermath of Covid-19 pandemic?
One null hypothesis was formulated at 0.05 alpha level
There is no significant difference between the perception of male and female senior secondary school teachers towards integrating ICT in senior secondary curriculum in the aftermath of Covid-19 pandemic?

METHOD

The study used a descriptive survey research design in order to gather information from senior secondary school teachers in all the eleven public senior secondary schools in Owerri Municipal Council of Imo State, Nigeria. The Population of the study consisted of all 310 Senior Secondary School teachers (78 males and 132 females) in Owerri municipal Council of Imo state. The whole population was used because of its small size. Instrument for data collection was teachers' perception questionnaire. A 15-item questionnaire designed by the researchers and validated by three experts in teacher education and educational psychology. The instrument was divided into two sections. Section A dealt with the teachers' demography, while section B dealt with Teachers' Perception towards implementing integrated ICT in senior secondary school curriculum in the aftermath of Covid-19 pandemic.

The instrument was weighted and scaled from strongly Agree (SA), Agree (A), strongly Disagree (SD) to Disagree (D). Respondents were made to tick the option that best described their opinion. The reliability index was tested using subjects outside the study population. A reliability coefficient of 0.83 was realized when data generated were subjected to cronbach alpha.

This yielded a 100% return. The data collected were analyzed using mean and standard deviation in answering the research questions. Any Item with a mean less than 2.50 was rejected while within and above 2.50 was accepted. The hypothesis was analyzed using independent t-test statistical tool tested at 0.05 level of significance.

RESULTS

Data generated from survey questionnaire were analyzed and presented in tables below.

Research Question 1

What is the perception of teachers towards integrating ICT in senior secondary school curriculum in the aftermath of Covid-19 pandemic?

S/N	ITEM STATEMENT	Male Teacher			Female Teacher		
		X	SD	REM	X	SD	REM
1.	I feel confident that learning new ICT skills will help me to be effective in handling distant learning classes	3.21	0.70	Accept	3.35	0.66	Accept
2.	I am aware of the great opportunities that ICT offers for effective teaching/learning for distant learning classes	3.82	0.76	Accept	3.64	0.61	Accept
3.	I think that ICT supported teaching makes distance learning more effective.	3.38	0.55	Accept	3.55	0.51	Accept
4.	I am confident that I am teaching effectively through ICT with my online classes.	3.44	0.67	Accept	3.41	0.61	Accept
5.	I believe that it is problematic to teach online even with the aid of ICT tools.	2.21	0.41	reject	2.34	0.34	Reject
6.	I believe ICT will help to improves the class climate (get students more engaged, less disturbing)	3.00	0.69	Accept	2.68	0.53	Accept
7.	I believe that students will understand more what they learn with integration of ICT in Curriculum delivery	3.68	0.80	Accept	3.59	0.82	Accept
8.	I think ICT integration in curriculum will make work easier for teachers and learners.	3.4.1	0.55	Accept	3.54	0.53	Accept
9.	I think with ICT integration in curriculum, students will understand lesson easily	3.74	0.62	Accept	3.80	0.69	Accept
10.	I think ICT integration in curriculum will enhance critical thinking in students.	3.29	0.60	Accept	3.50	0.54	Accept
	I think ICT integration in curriculum will help learners to be actively involved in learning.	3.27	0.82	Accept	3.39	0.89	Accept
12.	I think using ICT will promote innovation and problem-solving skills of my learners	3.49	0.53	Accept	3.61	0.70	Accept
13.	I believe that ICT will promote research-based teaching and learning	3.53	0.70	Accept	3.33	0.48	Accept
14.	I find the use of ICT in teaching and learning is time consuming	2.22	0.40	Reject	2.04	0.51	Reject
15.	I believe that ICT facilitates problem-based learning	3.53	0.68	Accept	3.53	0.78	Accept
	Cluster mean	45.84	10.03		49.3	10.03	
	Average mean response	3.17					

Result in Table1 shows that majority of the items on the questionnaire were accepted as they had response mean greater than the instrument scale mean (2.50). Also, the average mean (3.17) is greater than the scale mean (the acceptable mean average). This implies that teachers have high and positive perception towards integrating ICT in senior secondary school curriculum. It is noteworthy that item no 14 (I find the use of ICT in teaching and learning time consuming) has a mean average that is lower than the average cut off mean of (2.5). This indicates that teachers find ICT usage as time consuming. But generally from the grand mean, they have positive perception towards ICT integration.

This asserts that teachers have a positive perception and confidence that implementing integrated ICT in senior secondary school curriculum content and pedagogy will make for effective curriculum content delivery both for conventional schooling and online education in the Covid-19 pandemic.

RQ 2: What is the difference between the perception of male and female senior secondary school teachers towards integrating ICT in senior secondary school curriculum?

Table 2: Summary of male and female teachers mean response

Group	N	Mean	SD	Difference in $\bar{x}$
Male	78	3.06	0.66	0.22
Female	152	3.28	0.66	

Result in Table 2, shows that a mean difference of 0.22 exist between responses of male and female teachers on their perception toward integrating ICT in senior secondary school curriculum. This difference is quite insignificant.

HYPOTHESIS

H_{01}: There is no significant difference between the perception of male and female senior secondary school teachers towards integrating ICT in senior secondary school curriculum?

Table 3: Independent t-test analysis on teachers' perception by gender

Group	N	Mean $\bar{x}$	SD	DF	T. cal	P.value	Decision
Male	78	3.06	0.66	208	0.19	0.986	Accepted
Female	132	3.28	0.66				

Hypothesis on the differences in teachers' perception by gender, was tested using an independent t-test analysis which resulted in t(208)=0.19, p=0.97. Hence, the null hypothesis of no difference by gender was retained. This indicates that gender does not matter as far as teachers' perception was concerned on ICT integration into the curriculum content for teaching and learning.

DISCUSSION

Result of the present study revealed the perception of senior secondary teachers towards integrated ICT in senior secondary school curriculum in the aftermath of the covid-19 pandemics. Both male and female senior secondary school teachers have positive perception towards integrating ICT in senior secondary school curriculum delivery in the aftermath of covid-19 pandemics. This is because the covid-19 pandemic has made teachers to appreciate that ICT integrated curriculum content and pedagogy is key in delivering functional curriculum content online through distance education and in conventional classroom. More so, efficient use of ICT tools propel effective curriculum content delivery through online distance learning and it is compliant to the Covid-19 preventive protocols, which discourages crowded gathering, which is the basic nature of conventional classroom. Also ICT integration in Senior Secondary School Curriculum content and pedagogy will go a long way to enrich the lesson content and make the act of pedagogy inclusive, more learner centered and enhance the overall teaching and learning.

Kalu-Uche and Akanwa, 2016 and Adebanyo, 2012 are all in agreement with this study that

integrating ICT in curriculum delivery will help the teachers to effectively implement the school curriculum using different ICTs tools and resources. Also, that ICT in curriculum delivery will make learning more interacting and. interesting to learners. This therefore calls for interventions geared toward raising senior secondary school teacher's self-efficacy in integrating ICT in senior secondary school curriculum and in training teachers on the ICT skills that will help them to effectively use ICT in curriculum delivery. The consideration stems from the importance attached to the positive perception exhibited by teachers through evidence based research that they persist on task, take risks and use innovative strategies in teaching and learning.

Both male and female teachers used in the study have positive perception towards integrating ICT in learning. The result indicates that irrespective of sex that senior secondary school teachers' have positive perception towards integrating ICT in senior secondary school curriculum in the aftermath of Covid-19 pandemic. The result is also in agreement with EdTechHub, (2020) that teachers' believe in ICT integration in curriculum can go a long way to boost teachers' effectiveness in curriculum content delivery especially now that online distance learning is being encouraged as a result of the aftermath of Covid-19 pandemics. One could also affirm that why the teachers' perception of the integration of ICT in curriculum content delivery in the aftermath of Covid-19 was overwhelmingly high was that most teachers were forced to stop the conventional method of physical interaction with their students, and unfortunately had no alternative method to continue their teaching and learning.

CONCLUSION

The study carried out to determine senior secondary school teachers' perception towards integrating ICT in senior secondary school curriculum in the aftermath of Covid-19 pandemic, has shown that teachers are more positively inclined towards using technology for curriculum delivery both for effectiveness and continuity. The need for online teaching using technology is most complaint and Covid-19 friendly, without disrupting teaching and learning. Teachers' effectiveness with the use of online technology in pedagogy that will help in maintaining the Covid-19 protective protocol

depend on the perception that the teacher have on the workability or otherwise of ICT integration in curriculum delivery. The result of the study shows that senior secondary school teachers have positive perception towards integrating ICT in senior secondary school curriculum in the aftermath of Covid-19 pandemic irrespective of their gender.

RECOMMENDATIONS

The following recommendations are made thus;
1.   The opportunities created for the introduction of remote learning through ICT platforms are important. As senior secondary school teachers have positive perception towards it. The government should speed up the expansion of its existing ICT and remote learning capacity in senior secondary school curriculum, especially for learners with disabilities who may need access to assistive technology.
2.   Online education is the future. Therefore the relevant government authorities should try to develop the curriculum of senior secondary schools to fully integrate ICT in its curriculum content and pedagogy because of its huge opportunities.
3.   The Ministry of Education should see to it that there is continuous training of senior secondary school teachers on relevant ICT tools that will effectively help them in curriculum content delivery and pedagogy.
4.   Government should fast track the full integration of ICT in senior secondary school curriculum and make provisions for adequate ICT resources that will help senior secondary school teachers to effectively deliver the curriculum content both in online distance learning and conventional classroom.

REFERENCES

Adebayo, O. J. A., 2012. Study of Computer-Self-Efficacy and Attitude towards Technology-Enhanced Learning in Nigeria University. (Doctorial Thesis) Computer Science Department. University of Ibadan.

Anagbogu, G. E. Ofoegbu, J. U., Ovat, S. V., and Owor, E. O., 2021. A Path Analytical Model on Factors with the Implementation of Civic Education Curriculum among Teachers in Cross River State, Nigeria. Internal Journal of Education. 9 (3) 13-24.

Apeanti, W., 2014. Prospective Mathematics teachers' perception about ICT integration in mathematics instruction in Ghana. Global Educational Research Journal, 2(10), 174-184.

Bandura, A., 1993. Adolescent development from an agentic perspective. Self-efficacy beliefs of Adolescents 5(1), 1-43.

Bransford, J., Brown, A. L., and Cocking, R. R. (Eds.)., 2015. How people learn: brain, mind, experience, and school (2nd ed.). Washington, D.C.: National Academy Press.

Bingimlas, K. A., 2018. Barriers to the successful integration of ICT in teaching and learning environments: A review of the literature. Eurasia Journal of Mathematics, Science and Technology Education, 5 (3), 235-245.

Davis, F. D., Bagozzi, R. P., and Warshaw, P. R., 1989. User acceptance of computer technology: A comparison of two theoretical models. Management Science, 35(8), 982-1003.http://www.vvenkatesh.com/it/organizations/Theoretical_Models.asp#Con=structde

Ed Tech Hub., 2020. The effect of Covid-19 on education in Africa and its implications for the use of technology. A Survey of the Experience and Opinions of Educators and Technology Specialists. Retrieved from www.edtechhub.org

Emeje, J. C. and Ugwanyi, E. N., 2008. Challenges in the Utilization of Information and Communication Technology for effective counseling service delivery, The Educational Psychology, (4)1, 12-19

Ghavifekr, S., Kunjappan, T., Ramasamy, L., and Anthony, A., 2016. Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. Malaysian Online Journal of Educational Technology, 4(2). 38-57.

Hepp, A., Hinostroza, V., Laval, H., and Rehbein, 2004. Teaching competencies for technology integration in the classroom. Journal of computer Assisted learning, 25(5), pp. 453-469.

Kalu-Uche, N., and Akanwa, N., 2016. Information and Communications Technology in pre-service science teacher preparation: gaps. Academic Journal of Research and Development. (AJORAD).6(1) 123-128

Venkatesh, V., and Davis, F. D., 2000. A theoretical extension of the technology acceptance model: Fourlongitudinal filed studies. Management Science, 46, 186–204.

Wang, Y. M., 2002. When technology meets beliefs: Preservice teachers' perception of the teacher's role in the classroom with computers. Journal of Research on Technology in Education, 35(1), pp. 150-161.

United Nations Conference on Trade and Development – UNCTAD, 2014. Measuring ICT and Gender: An Assessment-Partnership on Measuring ICT for Development 2004-2014. New York and Geneva.

World Bank, 2009. Secondary Education in India: Universalizing Opportunity. Human Development Unit, South Asia Region.