



# **Information And Communication Technology Tools And Teachers' Job Performance In Public Secondary Schools In Port Harcourt Metropolis Of Rivers State**

**Prof. Eric C. Amadi<sup>1</sup> & <sup>2</sup>Siminialayi, Prinye Alaputa**

**Department of Educational Management  
Faculty of Education**

**Rivers State University, Port Harcourt, Rivers State, Nigeria**

<sup>1</sup>[amadieric@ust.edu.ng](mailto:amadieric@ust.edu.ng)/[+2348035452254](tel:+2348035452254)

<sup>2</sup>[prinyesim@gmail.com](mailto:prinyesim@gmail.com)/[+234804440939](tel:+234804440939)

## **ABSTRACT**

This study investigated Information and Communication Technology Tools and Teachers' Job Performance in Public Secondary Schools in Port Harcourt Metropolis, Rivers State. Two research questions and two hypotheses guided this study. The study adopted a correlation survey research design. The population of the study comprised of Two thousand, six hundred and thirty six (2,636) teachers teaching in the 36 public senior secondary schools in Obio/Akpor and Port Harcourt Local Government Areas of Rivers State. The sample size of the study was Three Hundred and Seventy Four (374) teachers drawn using the Taro Yamane Formula. A questionnaire titled "Information and Communication Technology Tools and Teachers' Job Performance" was the main instrument for data collection. The instrument was validated by two experts in Measurement and Evaluation and Educational Management. The reliability of the instrument was determined using test-retest method to achieve a reliability index of 0.86. The research questions were answered using the Pearson Product Moment Correlation Coefficient (PPMCC) while the null hypotheses formulated were tested using Pearson Product Moment Correlation Coefficient (PPMCC) at 0.05 level of significance. Findings revealed a positive relationship between use of ICT situating tools and use of ICT collaborative tools and teachers' job performance in public senior secondary schools in Port Harcourt Metropolis of Rivers State. It was recommended that school managements should ensure that teachers in secondary schools use situational tools in ICT to teach since it promotes their job performance and instigate the interest of learners.

**Keywords:** Information Communication and Technology, ICT Situating Tools, ICT Collaborative Tools

## **INTRODUCTION**

Education in Nigeria is an instrument for promoting national development and harnessing the potentials of the citizens (FGN, 2004; revised). The country's vision is for a complete transformation of all aspects of the nation's life over time. Education should therefore be able to effect inter and intra generational transmission of our cherished heritages and life invention. It should reposition Nigeria's global status in science and technology in all spheres of life. The Nigerian Society is dynamic and education being a micro unit of society has to change in line with social changes (Udofia, 2005). One of such major transformations that have taken place globally is the introduction of Information and Communication Technology (ICT) into every facet of human endeavor, and for education not to be caught off guard; it has to integrate ICT which the Nigerian teachers are adopting into all aspects of the school's curriculum from planning to evaluation.

During the last decades teachers utilization of Information and Communication Technology in the improvement of job performance has become a vital component in schools and schooling (Pelgrum & Anderson, 1999); and secondary schools in Nigeria are not left out in this quest for a

technologically-driven economy. ICT implementation by teachers has affected schools' functioning at multiple levels and increased their job performance. Subsequently teachers' utilization of teaching aids such as ICT tools cannot be overemphasized. Madueke (2011), pointed out that use of improvised materials and teaching aid in the art of teaching not only engage both the students' auditory and sensory organs in the art of teaching, but they also help students to remember effectively contents learnt. Today, the use of Information and Communication Technology gadgets to teach contents in different subjects has even proved to be a better teaching aid. This claim is supported by UNESCO Information and Communication Technology Competency Framework for Teachers (ICT CFT) (2011) which highlighted gains in using ICT to teach students such as; the fact that use of ICT gadgets to teach students makes the content taught more interesting to the students and sustains their attention as new technological device is used to learn, and this makes contents taught to appear interesting and fun.

Information and communication tools are very important for the development of education as well as its numerous stakeholders. Therefore, the field of education has been affected by the penetrating influence of Information and Communication Technology. Undoubtedly, ICT has impacted on the quality and quantity of teaching, learning and research in traditional and distance educational institutions. In concrete terms, ICT can enhance teaching and learning through its dynamic, interactive and engaging content, and it can provide real opportunities for individualized instruction. ICT has the potential to accelerate, enrich and deepen skills, motivate and engage students in learning. Studies have also been carried out on this, for instance, Ashar and Sharoon, (2016) in their study on students and teachers perceptions of ICT use in classroom: Pakistani classrooms confirmed that the use of Information and Communication Technology (ICT) has become a major driving force in transforming education throughout the world. The usage of ICT in Pakistan has increased many folds in the last 10 years. The latest educational policy of the Government of Pakistan has stressed on using ICT in schools. The curriculum documents have also suggested teachers to integration ICT in their classrooms teaching and learning processes.

Information and Communication Technology consists of various tools and systems that can be exploited by capable and creative teachers to improve teaching and learning situations. Lim and Tay in U.K. Essay (2013) identified five dimensions of ICT tools for teaching to include informative tools, resignation tools, constructive tools, communicative tools and collaborative tools. Expatiating on these tools, the informative tools include internet, network virtual drive, intranet systems, homepage; the 1) Informative tools - Internet, Network Virtual Drive, Intranet systems, Homepage, etc. (2) resignation devices - CD-ROM, etc. (3) Constructive tools - MS Word, PowerPoint, FrontPage, Adobe Photoshop, Lego Mindstorm, etc. 4) Communicative tools - e-mail, SMS, etc. (5) Collaborative tools - discussion boards, etc. forum

These tools also help to relate school experiences to work practices, create economic viability for tomorrow's workers, strengthen teaching and provide opportunities for connection between school and the world (Cradler, 2004). Information and Communication Technologies are essential tools in any educational setting. They have the potentials of being used to meet the learning needs of individual students, promote quality of educational opportunities, increase self-efficacy and independence of learning amongst students and improve teachers' professional development. ICT offers great opportunities for revolutionizing school administration (Kirschner & Woperies, 2005). It motivates and engages students in learning as they are encouraged to be more independent and responsible for their own learning. It helps to relate academics to the practice of today's work as the influence of ICT is pervasive in every field.

Teaching with the aid of ICT tools have been proved to aid better understanding and performance by students, (UNESCO ICT CFT, 2011), but teachers cannot teach if they do not possess requisite ICT competencies for teaching. For students to learn how to search for knowledge using ICT tools, teachers must be able to guide them in this task. Therefore, the study seeks to determine the relationship between ICT tools and teachers job performance in Public senior secondary schools in Port Harcourt Metropolis of Rivers State.

### **Conceptualization of Information and Communication Technology (ICT)**

The concept of information and communication technology is used to describe an array of technological gadgets ranging from computer to modern media gadgets which are primarily used to

share and communicate information. Information and communication technology (ICT) is the catchphrase used to describe a range of technologies for gathering storing retrieving processing analyzing and transmitting instruction (Uroko, 2006). The term Information according to Aliyi (2009) can be viewed as crude data that are processed into meaningful form: (Oyeyinika, 2001). Thomas and Ballard cited in Uroko (2006) stated that information is never valuable unless it is communicated in the right way to the user.

Communication on the other hand is a process of information dissemination. This information may be fact told, heard or discussed. Communication covers a wider spectrum than information. Communication according to Laudon (2007) is the process of transmitting information and understanding from one individual to another. In the view of Hadiza as cited by Uroko (2006), it is an interpretive medium of self – expression. The material are just like tools with which the communicator expresses his or her creative ideas. Also communication is a transaction: symbolic process which gives people the opportunity to relate and manage the environment by establishing human contact, exchanging information, reinforcing the attitude and behaviors of others (Ike, 2009). On the same line communication is a process of information exchange between two or more individuals or organization. Thus communication is a two – way process which involves imparting information to people (Danape, 2000)

Technology is the systematic application of scientific or other organized knowledge to practical tasks in schools and industries (Okeke, 2006). It is a complete integrated process for analyzing problems controlling and evaluating those problems. Teaching using technology is seen as a complex integrated organization of men and machines ideas procedure and management. It also includes process system management and control mechanism involving human and non-human (Imogie, 2008). Communication technologies include all media employed in transmitting audio, video, data and multimedia messages through hosts such as cable satellite wireless radio, infra-red, Bluetooth and Wi-Fi. Network technologies include personal Area Network (PAN), Campus Area Network (CAN), internets, extranets, Location Area Networks (LANs), and the Wireless Area Networks (WANs) (Danape, 2000). Computer technologies include all removable media such as optical disk (a rigid computer storage disk with data stored as tiny pits in the plastic coating, readable by laser beam), disk flash memories, video books, multimedia projectors, interactive electronic board and continuously emerging state-of-the-art personal computer Mobile technologies comprising mobile phones, personal digital assistance (PDAs) and palmtops. These technologies have made global information easily accessible.

Vincent and Vincent cited in Uroko (2006), defined information technology as new way of storing, processing and transmitting information which was brought about by rapid development in electronic computing. Information and communication technology (ICT) also is seen as the study of concepts skills processes and applications of designs for representing hypothetical or human relationships created, collected, stored, retrieved, manipulated, protected and presented electronically. It refers to a whole range of technologies involved in information processing and electronic communications.

French (2006) defines ICT as “a broad based technology including methods management and application that supports the creation, storage, manipulation and communication of information. Information and communication technology can also be seen as a modern way of making information easily accessible to most people. According to Nworgu (2006), ICT originated as information technology but it later became obvious that the communication component ought to be highlighted because of its significance. It was then that the concept transformed to information and communication technology (ICT).

Advances in ICT have progressively reduced the costs of managing information enabling individuals and organizations to undertake the related tasks much more efficiently and to introduce innovation in research processes and organizational structures. ICT when applied to education enhances the delivery and access to knowledge and improves the curriculum. It produces richer leaning outcomes compared to education without ICT. It encourages critical thinking and offers unlimited means of achieving educational goals. The key thing is not in ICT itself but in understanding ICT and effectively employing it in the delivery of knowledge and reaching goals in less time. ICT is used as a means but not as an end.

Four major approaches according to the UNESCO-ICT framework; have been identified for effectively employing ICT in education. They are the Emerging, Applying, Infusing and

Transforming approaches that constitute ICT optimization stages in education. These approaches are simultaneous and depend on each other for maximum benefit from ICT application to teaching. Information and communication technology (ICT) for this study is an electronic based technology generally used to collect, store, process and package information as well as providing access to knowledge. More also, it includes various technologies and their application such as the use of computer micro–electronic devices and satellite and communication technology. It is the processing, maintenance and the use of all forms of computer communication network and mobile technologies to mediate information.

### **Dimensions of Information and Communication Technology Tools for Teachers**

Information and Communication Technology consists of various tools and systems that can be exploited by capable and creative teachers to improve teaching and learning situations. Information and communication technology tools have different dimensions and uses. Their usage depends on the objective the user intends to achieve where applicable. The tools are many and a lot of them spring up frequently hence; the researcher decided to group the ICT tools into the following subheadings which are in line with Lim and Tay (2013) method of ICT tools grouping.

The two dimensions of ICT tools listed above are discussed in more detail under the following headings.

#### **6. ICT Situating Tools**

Situating tools is a system that lay the students in the environment where it involves a context and the occurrence of a situation. Examples of such systems include simulation, virtual reality and multi-user domain. Situating tools software tools such as CD-ROM. CD-ROM offers hypermedia application which gives better opportunities for teachers to enhance learning environment. Hypermedia application covers more than one of the following media such as text, audio, graphic images (still images), animation and video clips. Hypermedia applications are well integrated in the learning environment to enhance student autonomy and thinking (Cheung & Lim, 2000). A multimedia presentation topic will help students to conceptualize the ideas of the real world by integrating the theories in the practical application of real-world situations. It is to increase students' ability to use the conceptual tools of the discipline in authentic practice (Phillips, 2004). Multimedia able to put the amazing array of resources on student and lecturer resources on teaching and student 1control. Multimedia learning activate learning to create a more dynamic, interactive, collaborative, and satisfying

#### **7. ICT Collaborative Tools**

Collaboration tools of ICT is currently the focus of much interest and emerging as development of new tools that make online collaborative projects draw a realistic option for a distributed group work. Internet can be used for many collaborative activities such as meetings, discussions are taking place, working in the document, information dissemination, and other tasks. Interactive electronic whiteboard is not just used as tools for meeting and development, but recently became the most popular tool among teachers. Whiteboard is an electronic device that interfaces with the computer where the computer image is displayed on the board that can be manipulated interactively (Weiser & Jay, 1996). This tool is increasingly popular with teachers, when used in conjunction with a computer and a video projector that produces interactive learning community. Instead of having to crowd around one or two computers, interactive whiteboard not only display the materials, but also to respond to human interaction with computer commands and orders on a touch screen. In addition, these technologies provide impulsive information sharing, constructing knowledge and stimulate personal growth (Mona, 2004). Other collaborative tools, such as E-mail messaging, Wireless Application Protocol (WAP) and General Packet Radio Services (GPRS) embedded in micro-browser equipped mobile phones or GPRS enabled handheld computers are other ICT tools that that can link students in different geographic locations exceeding the boundaries of class. In addition, the development of mobile phone and PDA allows learners to exchange information in a short time simultaneously and asynchronously, and provides flexibility for one-one, one-to-many and many-to-many communication, especially for the online discussion forum. (Lim & Tay, 2013).

### **Statement of the Problem**

In the past, the most popular method of teaching was the didactic method of teaching where it was only based on just teacher and student interactions. But due to changes and evolution of knowledge,

teachers apply various tools to facilitate learning and pass information effectively to the student. One of such innovative methods of teaching now is the use of Information and Technology (ICT) tools to improve teaching and learning. The use of these ICT tools has come to stay to simplify some of the challenges both teachers and students face during teaching-learning situations.

There has been documented evidences that the use of ICT tools encourage, stimulate and facilitate effective learning. No doubt a lot of authorities have continued to encourage the application of ICT tools in teaching-learning situations. The researcher is also concerned about the use of ICT tools to enhance teaching and learning, hence, the researcher decided to study Information and Communication Technology Tools and Teachers' Job Performance in Public Secondary Schools in Port Harcourt Metropolis of Rivers State to find out the relationship between ICT tools and teachers' Job Performance.

### **Purpose of the Study**

The purpose of the study was to determine the relationship between Information and Communication Technology Tools and Teachers' Job Performance in Public Senior Secondary Schools in Port Harcourt Metropolis of Rivers State. Specifically, the study sought to:

1. determine the relationship between use of ICT situating tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State.
2. examine the relationship between use of ICT collaborative tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State.

### **Research Questions**

6. What is the relationship between use of ICT situating tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State?
7. What is the relationship between use of ICT collaborative tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State?

### **Hypotheses**

- Ho<sub>1</sub> There is no significant relationship between the use of ICT situating tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State.
- Ho<sub>2</sub> There is no significant relationship between the use of ICT collaborative tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State.

### **METHODOLOGY**

The study adopted a correlational research design. The population of the study was 2,636 teachers from 36 public senior secondary schools in Obio/Akpor and Port Harcourt Local Government Areas of Rivers State. A sample size of 347 teachers was drawn using Taro Yamane's formula. The instrument for the study was a self-designed questionnaire titled "Information and Communication Technology Tools and Teachers' Job Performance Questionnaire (ICTTTJPQ)". The instrument had two (2) sections, sections A and B. Section A dealt with demographic information while Section B had 8 questionnaire items. The instrument was validated by experts in the Departments of Educational Management and Measurement and Evaluation. The reliability of the instrument was determined using test-retest method and a reliability index of 0.86 was obtained using Pearson Product Moment Correlation Coefficient for the correlation of scores. The research questions were answered using the Pearson Product Moment Correlation Coefficient (PPMCC) or "r" while the null hypotheses

formulated were tested using t-transition at 0.05 level of significance.  $t = \frac{r \sqrt{n-2}}{r^2}$

**RESULTS**

**Research Question 1:** *What is the relationship between use of ICT situating tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State?*

**Table 1: Summary of Pearson Product Moment Correlation Coefficient on the Relationship Between Use of ICT Situating Tools and Teachers' Job Performance in Public Senior Secondary Schools.**

		USE OF ICT SITUATING TOOLS	TEACHERS' JOB PERFORMANCE
USE OF ICT SITUATING TOOLS	Pearson Correlation	1	.727**
	Sig. (2-tailed)		.000
	N	347	347
TEACHERS' JOB PERFORMANCE	Pearson Correlation	.727**	1
	Sig. (2-tailed)	.000	
	N	347	347

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source: Researcher's SPSS Data output (2021).**

Table 1 showed the responses to questionnaire items 1-4 on use of ICT situating tools and teachers' job performance. Table 1 above shows that there is a high and positive relationship between use of ICT situating tools as a variable for Information and Communication Technology Tools and teachers' job performance in Public Senior Secondary Schools in Port Harcourt Metropolis with a Pearson Product Moment Correlation Coefficient value of .727\*\*.

**Research Question 2:** *What is the relationship between use of ICT collaborative tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State?*

**Table 2: Summary of Pearson Product Moment Correlation Coefficient on the Relationship Between Use of ICT Collaborative Tools and Teachers' Job Performance in Public Senior Secondary Schools.**

		USE OF ICT COLLABORATIVE TOOLS	TEACHERS' JOB PERFORMANCE
USE OF ICT COLLABORATIVE TOOLS	Pearson Correlation	1	.543**
	Sig. (2-tailed)		.000
	N	347	347
TEACHERS' JOB PERFORMANCE	Pearson Correlation	.543**	1
	Sig. (2-tailed)	.000	
	N	347	347

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Source: Researcher's SPSS Data output (2021).**

Table 2 revealed the responses to questionnaire items 5-8 on use of ICT collaborative tools and teachers' job performance. The table further indicated that there is a positive but moderate relationship between use of ICT collaborative tools as a variable for Information and Communication Technology Tools and teachers' job performance in Public Senior Secondary Schools in Port Harcourt Metropolis with a Pearson Product Moment Correlation Coefficient value of .543\*\*.

**Hypotheses**

Ho<sub>1</sub> There is no significant relationship between the use of ICT situating tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State.

**Table 3: Summary of t-test Transition on the Significant Relationship Between Use of ICT Situating Tools and Teachers' Job Performance in Public Senior Secondary Schools.**

Variables	N	Df	r-value	t-cal.	t-crit.	LS	Decision
USE OF ICT SITUATING TOOLS							
	347	345	.727**	16.43	±1.96	0.05	Rejected
TEACHERS' JOB PERFORMANCE							

**Source: Researcher's SPSS Data output (2021).**

Table 3 above displayed the t-test Transition summary on the significant relationship between use of ICT situating tools and teachers' job performance in Public Senior Secondary Schools in Port Harcourt Metropolis of Rivers State. The result showed that a t-test transition value of 16.43 which was greater than the t-critical value of  $\pm 1.96$ . Therefore, the null hypothesis was rejected at 0.05 level of significance and 345 degree of freedom, and the alternative hypothesis was upheld which stated that there is a significant relationship between the use of ICT situating tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State. It was therefore concluded that there is a significant relationship between use of ICT situating tools and teachers' job performance.

Ho<sub>2</sub> There is no significant relationship between the use of ICT collaborative tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State.

**Table 4: Summary of t-test Transition on the Significant Relationship Between Use of ICT Collaborative Tools and Teachers' Job Performance in Public Senior Secondary Schools.**

Variables	N	Df	r-value	t-cal.	t-crit.	LS	Decision
USE OF ICT COLLABORATIVE TOOLS	347	345	.543**	16.43	$\pm 1.96$	0.05	Rejected
TEACHERS' JOB PERFORMANCE							

**Source: Researcher's SPSS Data output (2021).**

Table 4 above displayed the t-test Transition summary on the significant relationship between use of ICT collaborative tools and teachers' job performance in Public Senior Secondary Schools in Port Harcourt Metropolis of Rivers State. The result showed that the t-test transition value of 16.43 was greater than the t-critical value of  $\pm 1.96$ . Therefore, the null hypothesis was rejected at 0.05 level of significance and 345 degree of freedom, and the alternative hypothesis was upheld which states that there is a significant relationship between the use of ICT collaborative tools and teachers' job performance in Public Senior Secondary schools in Port Harcourt Metropolis of Rivers State. It was therefore concluded that there is a significant relationship between use of ICT collaborative tools and teachers' job performance.

## DISCUSSION OF FINDINGS

Findings on research question 1 revealed that there is a high and positive relationship between use of ICT situating tools as a variable for Information and Communication Technology Tools and teachers' job performance in public senior secondary schools in Port Harcourt Metropolis with a Pearson Product Moment Correlation Coefficient value of .727\*\*. Hypothesis 1 on table 3 also showed that there is a positive significant relationship between the use of ICT situating tools and teachers' job performance in public senior secondary schools in Port Harcourt Metropolis of Rivers State with t-test transition value of 16.43 which was greater than the t-critical value of  $\pm 1.96$ . The above findings agree with Cheung and Lim (2000) who noted that hypermedia applications are well integrated in the learning environment to enhance student autonomy and thinking. Also in support Phillips (2004) asserted that it increases students' ability to use the conceptual tools of the discipline in authentic practice.

Findings on research question 2 revealed that there is a positive but moderate relationship between use of ICT collaborative tools as a variable for Information and Communication Technology Tools and teachers' job performance in public senior secondary schools in Port Harcourt Metropolis with a Pearson Product Moment Correlation Coefficient value of .543\*\*. Hypothesis 2 on Table 4 also showed that there is a positive significant relationship between the use of ICT collaborative tools and teachers' job performance in public senior secondary schools in Port Harcourt Metropolis of Rivers State with t-test transition value of 16.43 which was greater than the t-critical value of  $\pm 1.96$ . The above findings are in tandem with Lim and Tay (2013) who buttressed that the development of mobile phone and PDA allows learners to exchange information in a short time simultaneously and

asynchronously, and provides flexibility for one-one, one-to-many and many-to-many communication, especially for the online discussion forum.

## CONCLUSION

The study concluded that use of ICT situating tools and use of ICT collaborative tools have a positive relationship with teachers' job performance in public senior secondary schools in Port Harcourt Metropolis of Rivers State.

## RECOMMENDATIONS

1. School managements should ensure that teachers in secondary schools use situational tools in ICT to teach since it promotes their job performance and instigate the interest of learners.
2. Provision of collaborative tools in ICT should be made available to secondary schools by Government at various levels and teachers trained in its usage in order enhance their job performance.

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