



doi:10.5281/zenodo.14769465

Role of Information and Communication Technology in Educational Development in Rivers State

Dr. (Mrs.) Patricia Ellah Okim Agbor¹, Dr. (Mrs.) Ukoima, Nkalo Ruth² and Dr. Coral Umukoro³

**Department of Educational Psychology, Guidance and Counselling
Faculty of Education,**

Rivers State University, Port Harcourt, Rivers State, Nigeria

Email: patricia.agbor@ust.edu.ng/ruth.ukoima@ust.edu.ng/coralpstron31@gmail.com

Phone Number: 08033697766/08036649503/08037065319

ABSTRACT

The study examined the role of information technology and communication in educational development in Rivers State. Three purpose of the study, 3 research questions and three hypotheses guided the study. The researchers adopted a descriptive survey design. The population of the study consisted of 9700 JSS II students in Emohua Local Government Area of Rivers State. The sample size was 400 JSS II students in Emohua Local Government Area. This was gotten from Taro-Yamane method of sample reduction. The researchers structured an instrument titled “Role of Information Technology and Communication in Educational Development Questionnaire”. The instrument was divided into two sections. Section A and section B. Section A elicit information of the researchers personal data while section B is structured in a four point rating scale of Very High Extent (VHE) = 4 points, High Extent (HE) = 3 points, Low Extent (LE) = 2 points and Very Low Extent (VLE) = 1 point. The instrument was validated by experts on Educational Psychology, Guardians and Counseling Department and test-re-test was used to get the reliability of the instrument at 0.86 reliability index. Based on the analysis, the findings of the study revealed that ICT enhanced learning experience, enhanced improved access to information and increased collaboration and communication in Rivers State. Based on the findings of the study, the researcher recommends that: government, through the school management should give the students access to ICT facilities and school management should encourage the student to make more use of collaboration study through the uses of ICT.

Keywords: Access, Communication Educational Development, Information, Learning Experience, Technology

INTRODUCTION

Information Communication Technology (ICT) revolutionized information access and sharing. Students and teachers can access educational resources from anywhere in the world through the internet. Information and Communication Technology (ICT) has become an essential part of modern education. With the rise of technology, students and teachers are benefiting from a range of digital tools and resources that help facilities learning and enhance educational outcomes.

ICT tools such as multimedia presentations, videos, and online educational resources can help to enhance the learning experience for students. These tools provide visual and interactive learning opportunities that can help to engage students, and make learning more interesting and fun. With ICT tools, students can access a range of learning resources that can be tailored to their individual needs, abilities, and learning styles. ICT has revolutionized information access and sharing Students and teachers can access educations resources

from anywhere in the world through the internet. Online libraries, databases and educational websites can provide students with up-to-date information that is relevant to their studies (Pamale, 2021). The information can be accessed quickly and easily, allowing students to learn at their own pace and in their own time.

ICT tools can help to facilitate collaboration and communication between students and teachers. Online forums, discussion boards, and social media platforms can provide students with a sense to interact and share ideas. This can help to foster a sense of community and enable students to learn from each other. Online communication tools such as email and video conferencing can also help to connect students and teachers who are geographically dispersed. ICT tools can help to facilitate personalized learning by providing students with learning resources that are tailored to their individual needs and abilities (Alegre, 2020). Online assessments, quizzes, and adaptive learning platforms can help to identify students' strengths and weaknesses and provide personalized feedback and support. This can help to ensure that students are challenged and engage in their learning and can progress at their own pace.

ICT tools can help to streamline administrative tasks and improve the efficiency of school operation. Online databases, student information systems, and learning management system can help to manage student data and provide teachers with access to student progress reports, attendance records, and other important information. This can help to free up teachers' time and allow them to focus more on teaching and supporting students. As technology continues to evolve, it is essential that students are equipped with the skills and knowledge to succeed in a digital world (Guo, 2017). ICT skills such as digital literacy, coding, and data analysis are becoming increasingly important in the workplace. By incorporating ICT into the curriculum, schools can help to prepare students for the future and equip them with the skills they need to succeed in the digital age.

We live in an era of information explosion. Once there was famine of information today, we are drowned in the deluge of information. Information and Communication Technology (ICT) is a catalyst agent. ICT has initiated new possibilities into the classroom. The marriage between education and Internet technology has made a deep impact on perspectives about teaching and learning. Technology, today, has revolutionized in such a way that the methodology used by educators to teach a foreign or secondary language has changed. In fact, the relationships between teachers and students have undergone a phenomenal change. (Barad, 2019). The role of the teacher, the nature and context of learning, as well as the function and relative importance of course content have all been challenged and redefined. Therefore, technophobic teachers have no place in this new world order.

The impact of ICT on teaching-learning at all levels of education is gaining global acknowledgement, and so the system of education in Nigeria must not lag behind. A paradigm shifts from the teacher-centered and talk method of teaching, to a more student-centered method of indirect explanation through demonstration by the use of ICT. According to Perren (2018) "adequate teaching requires both a sufficient number of teachers to man the schools and minimum level of efficiency in their teaching, With the emergence of Information Communication Technology (ICT) in the 21 century, alternation is being shifted to e-learning globally.

Nigeria, as a nation, has recognized the potentials of information and that of information and communication technology in the school system. This is evidenced in the educational reform policies aimed at integrating the use of ICT, particularly the computer, in the Nigerian school system. The first national programme was the Federal Government 1988 policy document, National Policy on Computer education (FME, 2018). The document emphasized the need for primary school pupils to be introduced into basic computer skill, the use of the computer to facilitate learning, and rudimentary use for text writing, computation and data entry. For secondary schools the goals were as identified for primary schools, but to be pursued at a higher level. The additions were the organization of curriculum for secondary school students on computer education, and the decision to use the unity schools as the pilot institutions for computer education. The tertiary institutions were also required to teach computer science as a subject discipline, and also integrate it in school administration and instructions. Other components of the document include; equipment requirement, teacher training, and specific recommendation on different tertiary institutions. However, as noted earlier, the implementation was not effective.

ICT plays a crucial role in enhancing the learning experience for students in secondary schools by improving the quality of education, increasing student engagement, and shifting teaching practices towards student-centered approaches. By integrating ICT tools such as Smart LED TVs, Tablet PCs, and interactive e-learning applications, schools can improve academic achievements, increase student interest, attendance, and enrollment (Hoven, 2019). Additionally, the use of digital learning tools by teachers can enhance student engagement cognitively, emotionally, and behaviorally, leading to a more effective learning process. Furthermore, ICT enables the simplification of educational management, organization of teaching experience exchange, and expansion of didactic capabilities, ultimately motivating students towards independent learning and activating cognitive activity.

Developments in Information and Communication Technologies (ICT) have changed the way libraries provide information and library services to its patrons. These same developments have also availed library users with various ICT tools that enhance access to information, as well as changing their expectations from the libraries in different ways. Today's library users are now more digital native and digital immigrants who are ready to leverage their digital skills to enhance their access to information to meet their information needs.

ICT provide the necessary platform for the deployment of library website, Gbaje (2014) asserted that with the growing use of the Internet, librarians now use web sites as a means to facilitate access to specific Internet and digital resources. Library website supports users in their information tasks, hence it has been identified as a platform for library to recommend sites and point users to relevant and current electronic information resources. Library website creates an information environment where the provision of information resources and service is no longer constrained by time and place. Supporting this assertion, Jo0 (2021) posited that "library websites plays a role of an extension and augmentation of a traditional physical library, and offers a variety of library services such as gateways to electronic resources, online catalogs, and online reference services. The library website has been identified as a platform for the dissemination of information, recommendation of the informational websites and a guide or point for users to relevant and current electronic information resources. Blummer (2017), noted that in the early I 990s websites were tools for communication, providing University communities with information about the collections and services available in the physical library. These types of information still remain pertinent and should be available in any library website. As libraries and their users continue to make greater use of the Internet, librarians now use website as a means to provide web-based library and information services, as well as facilitate access to both print and non-print resources.

Technology can enhance collaboration and communication among learners through online collaboration tools like Google Workspace or Microsoft Teams, virtual classrooms such as Zoom, and platforms like Moodle or Canvas for centralized learning management. Collaboration and communication are essential skills for learners in the 21st century. Technology can help you foster a culture of collaboration and communication in your learning environment, whether it is online, blended, or face-to-face (Barad, 2019). In this article, you will learn how to use technology to enhance collaboration and communication among learners by following these six strategies:

Online platforms are powerful tools that enable you to create, share, and manage digital content with your learners. Such platforms can facilitate collaboration and communication by providing interactive activities, such as quizzes, polls, games, and simulations. They also offer learners the chance to create and showcase their own digital products, such as blogs, podcasts, videos, and portfolios (Guo, 2017). Additionally, online platforms afford learners the opportunity to connect with peers and experts in online communities of practice to share resources and ideas, as well as participate in discussions and debates.

Online platforms have revolutionized the way we learn and interact with educational content. They provide a diverse range of tools and features that enhance engagement and collaboration among learners. From interactive activities to peer-to-peer networking, these platforms offer a dynamic learning environment that caters to different learning styles and preferences. Moreover, the ability for learners to create and share their own content fosters creativity and ownership of their learning journey (Pamala, 2021). Overall, online platforms play a crucial role in modern education by facilitating accessible, interactive, and personalized learning experiences.

Technology shapes the way the society and the economy are organised. Over time, technology has filled in the Knowledge Gap, Power Gap, Distance Gap and now is trying to address the Trust Gap. As the trust gap is getting filled we see communication is getting enhanced which eventually simplifies economic transactions and hence the growth of online businesses (Perren, 2018). We also see improved collaborations at work and social places through use of modern technologies which provide more efficiency and effectiveness.

By integrating technologies thoughtfully, educators can create a dynamic and collaborative learning environment that fosters communication, teamwork, and knowledge sharing among learners. Platforms like Google Workspace and Microsoft Teams offer features such as document sharing, real-time editing, and instant messaging to facilitate communication and teamwork. Virtual classrooms or video conferencing tools like Zoom or Microsoft Teams allow learners to interact in real-time, regardless of their physical locations (Joo, 2021). Integrate social media platforms into the learning environment to encourage informal communication and collaboration.

Statement of the Problem

One of the most important reasons for using ICTs in the classroom is to better prepare the students to catch up with the global trend in which computers, internet, social media and related technologies are used to replace previous analogue-based activities. ICTs can help to improve the quality of education by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training.

Although there have efforts to integrate ICT in teaching and learning process in Nigeria, many obstacles to its realization still exist. Equipment may not be placed in easily accessible locations. Hardware and software often pose problems for teachers in the classroom. Teachers may lack the time and the motivation to learn technology skills. Yet, teachers readily admit that they are not making as much use of technology as they could. Although ICT is prevalent in Nigeria, only a few among teachers and students have access to ICT based education, ICTs are transformational tools which can promote the shift to a learner-centered environment. ICTs can be harnessed to improve the efficiency and effectiveness of teaching and learning in universities and secondary schools. ICT transcends time and space therefore its importance in teaching and learning cannot be overemphasized.

Purpose of the State

The study seeks to examine Role of Information Technology and Communication in Educational Development in Rivers State. Specifically, the study sought to:

1. Find out the extent to which ICT learning experience enhance educational development in Rivers State
2. To examine the extent to which ICT improved access to information enhance educational development in Rivers State.
3. To determine the extent to which ICT increased collaboration and communication enhance educational development in Rivers State.

Research Questions

The researcher developed the following research questions that guided the study.

- 1 To what extent does learning experience as an ICT Role enhance educational development in Rivers State?
- 2 To what extent does improved access to information as an ICT role enhance educational development in Rivers State?
- 3 To what extent does increased collaboration as an ICT role enhance educational development in Rivers State?

Hypotheses

The researcher developed the following null hypotheses that guided the conduct of the study.

1. There is no significant difference in the mean ratings of male and female students on the extent learning experience as an ICT Role enhance educational development in Rivers State?
2. There is no significant difference in the mean ratings of male and female students on the extent improved access to information as an ICT role enhance educational development in Rivers State?

- 3 There is no significant difference in the mean ratings of male and female students on the extent increased collaboration as an ICT role enhance educational development in Rivers State?

METHODOLOGY

The study made use of descriptive survey research design. The population of the study consists of 9,700 JSSII students in Emohua Local Government Area of Rivers State. The sample size of the study is 400 JSSII students. Simple random sampling technique was used which gives equal opportunity to all the population. The researcher made use of self-structured questionnaire titled “Role of Information Technology and Communication in Educational Development Questionnaire (RITCEDQ) to gather data from the respondents. The questionnaire was divided into two (2) sections. (A and B). Section A deals with the demographic detail of the respondents while section 13 contained fifteen (15) items based on the objectives of the study. The responses scale was structured on 4-point rating scale. The instrument was validated using the experts in Department of Educational Psychology, Guidance and Counselling. To achieve the reliability of the instrument, the researcher made use of test-retest method where a reliability index of 0.86 was obtained. The instrument was distributed directly to the respondents by the researcher. The data collected were analysed using mean and standard deviation for the research questions while the null hypotheses were tested using z-test statistical tool at 0.05 level of significant.

RESULTS

Research Question 1: *To what extent does ICT learning experience enhance educational development in Rivers State?*

Table 1: Mean and standard deviation analysis on the extent ICT enhance educational development in Rivers State learning experience

S/No	Questionnaire Items	Male Students = 180			Female Students =220		
		Mean \bar{X}	SD	Remarks	Mean \bar{X}	SD	Remarks
1.	Smart LED TVs enhance learning experience of the students thereby leading to educational development	2.89	0.85	High Extent	2.95	0.86	High
2.	ICT Tablet PCs enhance the secondary school learning experience which lead to educational development	2.86	0.83	High	2.86	0.84	Extent
3.	ICT plays a crucial role in the learning experience of students by improving the quality of education	2.50	0.79	Extent	2.50	0.79	High
4.	ICT has helped to increase students engagement in academic activities.	2.83	0.84	High	2.82	0.84	Extent
5.	ICT has helped in shifting teaching practice toward students centered approach.	2.86	0.84	Extent	2.86	0.84	High
Grand Total		2.84	0.84		2.88	0.85	

Source: Field Survey, 2024

The analysis in Table I above revealed that the respondents agreed on the view that Smart LED TVs enhance learning experience of the students thereby leading to educational development. The analysis still indicated

that the respondents accepted the fact that ICT Tablet PCs enhance the secondary school learning experience which lead to educational development. It was also observed in the study that the respondents accepted the fact that ICT plays a crucial role in the learning experience of students by improving the quality of education. The analysis also revealed that the respondents agreed on the view that ICT has helped to increase students engagement in academic activities and that ICT has helped in shifting teaching practice toward students centered approach.

Research Question 2: *To what extent does ICT improved access to information enhance educational development in Rivers State?*

Table 2: Mean and standard deviation analysis on the extent ICT improved access to information enhance educational development in Rivers State

S/No	Questionnaire Items	Male Students = 180			Female Students =220		
		Mean \bar{X}	SD	Remarks	Mean \bar{X}	SD	Remarks
6.	The introduction of ICT has changed the way libraries provides information to the students which has led to educational development	2.50	0.79	High Extent	2.50	0.79	High Extent
7.	Uses of ICT Has availed library users with various ICT tools that enhance access to information.	2.83	0.84	High Extent	2.95	0.86	High Extent
8.	ICT provide the necessary platform for the deployment of library website which has led to educational development.	2.97	0.86	High Extent	2.98	0.86	High Extent
9.	Library website has been identified as a platform for the dissemination of information.	2.94	0.86	High Extent	2.99	0.86	High Extent
10.	Librarians now use website internet and digital resources.	2.92	0.85	High Extent	3.00	0.87	High Extent
Grand Total		2.90	0.85		2.97	0.86	

Source: Field Survey, 2024

The data analysis in Table 2 above indicated that the respondents accepted the point that the introduction of ICT has changed the way libraries provides information to the student which has led to educational development. The analysis also showed that the respondents agreed on the view that uses of ICT Has availed library users with various ICT tools that enhance access to information. It was still noticed in the study that the respondents agreed on the fact that ICT provide the necessary platform for the deployment of library website which has led to educational development. The analysis also revealed that the respondents accepted the view that library website has been identified as a platform for the dissemination of information. The study indicated that the respondents agreed on the fact that librarians now use website internet and digital resources to gain or get useful information.

Research Question 3: *To what extent does ICT increased collaboration and communication enhance educational development in Rivers State?*

Table 3: Mean and standard deviation analysis on the extent ICT increased collaboration and communication enhance educational development in Rivers State

S/No	Questionnaire Items	Male Students = 180			Female Students =220		
		Mean \bar{X}	SD	Remarks	Mean \bar{X}	SD	Remarks
11.	ICT has enhanced collaboration and communication among learners through google workspace.	2.83	0.84	High Extent	0.85	0.85	High Extent
12.	Technology helped to foster a culture of collaboration and communication in your learning environment	2.72	0.82	High Extent	0.84	0.84	High Extent
13.	Collaboration and communication 2.75 are essential skills for learners in the 21 century	2.75	0.83	High Extent	0.85	0.85	High Extent
14.	Through the uses of ICT, students 2.69 0.82 easily do team work to enhance their level of reasoning.	2.69	0.82	High Extent	0.86	0.86	High Extent
15.	Uses of virtual classrooms has 2.50 enhance the students communication skill and lead to educational development	2.50	0.79	High Extent	0.79	0.79	High Extent
Grand Total		2.73	0.83		2.90	0.85	

Source: Field Survey, 2024.

The analysis in Table 3 above showed that the respondents accepted the point that ICT has enhanced collaboration and communication among learners through Google workspace. The study still revealed that the respondents agreed that technology helped to foster a culture of collaboration and communication in your learning environment. It was also observed from the analysis that the respondents accepted the point that collaboration and communication are essential skills for learners in the 21 century. The analysis still indicated that the respondents agreed on the view that through the uses of ICT, students easily do team work to enhance their level of reasoning. The study also showed that the respondents accepted the fact that uses of virtual classrooms has enhance the students' communication skill and lead to educational development.

Test of Hypotheses

Hypotheses 1: There is no significant difference in the mean ratings of male and female students on the extent Id learning experience enhance educational development in Rivers State.

Table 4: Mean and Standard Deviation Analysis on the significant difference in the mean ratings of male and female students on the extent ICT learning experience enhance educational development in Rivers State

Variable	N	\bar{X}	SD	Df	z-cal	z-crit	Sig. Level	Decision
Male Students	180	2.84	0.84	398	1.67	1.96	0.05	Accepted
Female Students	220	2.88	0.85					

Source: Field survey, 2024

The analysis on table 4 revealed that the z-cal of 1.67 is less than the z-crit of 1.96. The calculated z-ratio is not statistically significant at a 0.05 level of significant since it is smaller than the given critical value of z-ratio. The hypothesis I is thus accepted and the conclusion is that there is no significant difference in the mean ratings of male and female students on the extent ICT learning experience enhance educational development in Rivers State.

Hypotheses 2: There is no significant difference in the mean ratings of male and female students on the extent ICT improved access to information enhance educational development in Rivers State.

Table 5: Mean and Standard Deviation Analysis on the significant difference in the mean ratings of male and female students on the extent ICT improved access to information enhance educational development in Rivers State

Variable	N	\bar{X}	SD	Df	z-cal	z-crit	Sig. Level	Decision
Male Students	180	2.90	0.85	398	1.19	1.96	0.05	Accepted
Female Students	220	2.97	0.86					

Source: Field survey, 2024

The analysis on tables indicated that the z-cal of 1.19 is smaller than the z-crit of 1.96. The calculated z-ratio is not statistically significant at a 0.05 level of significance since it is less than the given critical value of z-ratio. So, the hypothesis 2 is thus accepted and the conclusion is that there is no significant difference in the mean ratings of male and female students on the extent ICT improved access to information enhance educational development in Rivers State.

Hypotheses 3: There is no significant difference in the mean ratings of male and female students on the extent ICT increased collaboration and communication enhance educational development in Rivers State.

Table 6: Mean and Standard Deviation Analysis on the significant difference in the mean ratings of male and female students on the extent ICT increased collaboration and communication enhance educational development in Rivers State

Variable	N	\bar{X}	SD	Df	z-cal	z-crit	Sig. Level	Decision
Male Students	180	2.73	0.83	398	1.22	1.96	0.05	Accepted
Female Students	220	2.90	0.85					

Source: Field survey, 2024

The analysis on table 6 showed that the z-cal of 1.22 is less than the z-crit of 1.96. The calculated z-ratio is not statistically significant at a 0.05 level of significance since it is smaller than the given critical value of z-ratio. So, the hypothesis 3 is thus accepted and the conclusion is that there is no significant difference in the

mean ratings of male and female students on the extent ICT increased collaboration and communication enhance educational development in Rivers State.

DISCUSSION OF FINDINGS

The finding of the study in research question one: To what extent does ICT learning experience enhance educational development in Rivers State revealed that ICT learning experience enhance educational development in Rivers State. This finding is in collaboration with Guo (2017), who observed that Smart LED TVs enhance learning experience of the students thereby leading to educational development. The analysis still indicated that the respondents accepted the fact that ICT Tablet PCs enhance the secondary school learning experience which lead to educational development. It was also observed in the study that the respondents accepted the fact that ICT plays a crucial role in the learning experience of students by improving the quality of education. The analysis also revealed that the respondents agreed on the view that ICT has helped to increase students' engagement in academic activities and that ICT has helped in shifting teaching practice toward students centered approach.

The study in research question two: To what extent does ICT improved access to information enhance educational development in Rivers State indicated that ICT improved access to information enhance educational development in Rivers State. This study is in the same view with Gbaje (2014), who admitted that the introduction of ICT has changed the way libraries provides information to the student which has led to educational development. The analysis also showed that the respondents agreed on the view that uses of ICT Has availed library users with various ICT tools that enhance access to information. It was still noticed in the study that the respondents agreed on the fact that ICT provide the necessary platform for the deployment of library website which has led to educational development. The analysis also revealed that the respondents accepted the view that library website has been identified as a platform for the dissemination of information. The study indicated that the respondents agreed on the fact that librarians now use website internet and digital resources to gain or get useful information.

The finding of the study in research question three: To what extent does ICT increased collaboration and communication enhance educational development in Rivers State showed that ICT increased collaboration and communication enhance educational development in Rivers State. This finding is in the same vain with Barad (2019), who observed that ICT has enhanced collaboration and communication among learners through google workspace. The study still revealed that the respondents agreed that technology helped to foster a culture of collaboration and communication in your learning environment. It was also observed from the analysis that the respondents accepted the point that collaboration and communication are essential skills for learners in the 21 century. The analysis still indicated that the respondents agreed on the view that through the uses of ICT, students easily do team work to enhance their level of reasoning. The study also showed that the respondents accepted the fact that uses of virtual classrooms has enhance the students communication skill and lead to educational development.

CONCLUSION

This study essentially examined role of Information Technology and Communication in educational development in Rivers State. This study concludes that ICT learning experience, ICT improved access to information and ICT increased collaboration and communication enhance educational development in Rivers State. The study deduced that The impact of ICT on teaching-learning at all levels of education is gaining global acknowledgement, and so the system of education in Nigeria must not lag behind. A paradigm shifts from the teacher- centered and talk method of teaching, to a more student- centered method of indirect explanation through demonstration by the use of ICT. Adequate teaching requires both a sufficient number of teachers to man the schools and minimum level of efficiency in their teaching, With the emergence of Information Communication Technology (ICT) in the 21 century, alternation is being shifted to e-learning globally.

RECOMMENDATIONS

In the light of these observations, this study recommends as follows that:

1. Government, through the school management should give the students access to ICT facilities
2. Government through the school management should introduce the use of Smart LED for teaching and learning hence it enhanced learning experience.
3. School management should encourage the students to make more use of collaboration study through the uses of ITC.

REFERENCES

- Alegre, M. (2020). *Knowledge maps: ICTs in education (on-line)*. Washington DC: infoDev/World Bank: Retrieved 8th October, 2016.
- Barad, A. (2019). Computer education in Nigerian secondary schools. Gaps between policy and practice. *Meridian. A Middle School Computer Technologies Journal*, 6(2), 49- 66
- Blummer, O. (2017). A study of the dimensions of teachers' attitude toward computer education in Nigerian secondary schools. *Nigeria Journal of Computer Literacy*, 2(1), 47-58/
- Dike, J. & Galadinma, S. (2017). *Quality in learning. A capability approach in higher education*. London: Kogan Page.
- Federal Ministry of Education (FME) (2007). *Education Reform Act Arrangement of parts (Education Sector Reform Bill)*. Abuja: author Ilorin. *Journal of Education*, 10,9-100
- Federal Republic of Nigeria (FRN) (2004). *National Policy on education* (4th ed.). Lagos NERDC Press.
- Gallimore R, Stigler J (2003). Evolving teaching into a profession. *TechKnowlogia*. 32-34 [on-line]. Retrieved of October 2016. <http://www.techknowlogia.org/TKLactivepages2/CuffentArtjcles/maiap/iSSueNrnumber=19&FileType=PDF&ArticleID=19>
- Gbaje, H. (2014). Use and perception of computers by educationists at the university of Ibadan.
- Guo, I. (2017). Synthesis of research on computer based instruction. *Educational Leadership*, 4, 19-21
- Hoven, F. (2019). Nigerian national policy for information technology (IT) (electronic version). Retrieved October 1,2016, from http://www.nitda.gov/docs/policy/ngit_policy.pdf
- Joo, P. (2021). An investigation into teachers' self efficiency in the implementation of computer education in Nigerian secondary schools. *Meridian: a middle school computer technologies journal*, 8 (2), 148-157.
- Kay and Honey (2015). *Africa connected*. First Monday, 3 (11). Retrieved 2 October, 2016 from <http://www.firstmonday.dk/issues/11/hail/index.html>
- Pamala, M (2021) *ICT in education: Possibility and challenges*. Inaugural Lecture of the University Obeerta de Catalunya (UOC) 2004 -2005 Academic year [on-line]. Retrieved 1 3th the October 2016 from <http://www.uoc.eu/inauguralo4/dt/eng/carnoy1004.pdf>.
- Perren (2018). *Report on policy on computer education*. Lagos National committees on computer education.
- World Bank (2003), *Lifelong learning in the global knowledge economy: challenges or developing countries*. *TechKnowlogia*, 77-80 [on-line] 23rd of November 2007 from <http://www.techknowlogia.org/TKLactivepages2/CurrentArticles/mainmap?issueN7mber=I9&FileType=PDF&ArticleID=I19>