

The Relevance of Ict in Teaching and Learning as Perceived by Secondary School Students in Anambra State

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Abstract

The study was designed to investigate the relevance of ICT in teaching and learning as perceived by secondary school students in Anambra State. The study adopted a descriptive survey and was guided by four research questions and two null hypotheses. The population comprised of all Junior Secondary School 2 (JSS2) students in public secondary schools studying computer studies in Anambra State. Purposive sampling technique was used to select Awka Education Zone for the study. Simple random sampling technique (balloting with replacement) was used to draw 10 co-educational public secondary schools out of 61 co-educational public secondary schools in Awka Education Zone of Anambra State. A multistage sampling was used to select the sample. The sample consists of 10% of the selected co-educational public secondary schools in Awka Education Zone. The total number of the sample used was 156 students. A questionnaire was developed by researchers for data collection. The data was analyzed using mean, standard deviation and t-test. The findings from the results revealed that ICT help students to master basic computer skills leading to self reliance and self employed after school. It equally fosters students' study interest and career prospects like computer scientist, computer technologist and the like. Based on the findings, recommendations were made. The study recommended among others that the Government should provide a retraining programme for secondary school teachers to meet up with the challenges and demands of the new curriculum.

Keywords: ICT, Teaching, Learning

INTRODUCTION

Education has been identified as a vital tool for any form of development either economical, social or political, adaptation and survival which emanate from teaching and learning that gears towards the actualization of curriculum goals. It is a factor that determines the state of prosperity substance of welfare and security of people (Osakwe, 2006). The yearnings, needs, aspirations as well as the cultural heritage and environment of any society determine to a large extent the kind of knowledge and skills to be acquired (Adeobosin, 2004). This leads to the introduction of National Policy on Education (NPE).

The National Policy on Education (NPE) depicts that there is need for functional and effective ICT Education application for promotion of a progressive, and united Nigeria. The school program therefore needs to be relevant, practical and comprehensive (NPE, 2004). An effective application of ICT Education for classroom curriculum delivery in Nigeria can be achieved when the educational system is tailored towards the actualization of goals of self-realization, better human relationship, individual and natural efficiency, effective citizenship, national consciousness, national unity, as well as towards social, cultural, economic political, scientific and technological progress (NPE, 2008). Akudolu (2000) supported the assertion that ICT promotes acquisition of knowledge and career development for self reliance when used effectively. It equally uplifts educational qualities for real life situation (Ezegbe, Idu and Mezieobi, 2013). Hence, it becomes pertinent to ask: The relevance of ICT in Teaching-Learning to achieve these goals.

ICT stands for information and communication technology. It is often used as an extended synonym for information technology (IT), but is a more specific term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage and audio-visual systems. These enable users to access, store, transmit and manipulate information (Madaki and Nwanze, 2015). ICT can also be referred as the acquisition, analysis, manipulation, storage

and distribution of information and the design and provision of equipment and software for these purposes (Yerokun, 2015). Similarly, Yusuf (2005) stated that ICT has the potential to accelerate, enrich and deepen skills to motivate and engage students to help relate school experience to work practice, create economic viability for tomorrow's workers, and strengthening teaching –learning in schools. In addition, the use of ICT in teaching and learning increases students' understanding of concepts, intensified skills and encourages transfer of knowledge (Collodi, 2006). It is seen as one of the indispensable tool or a powerful force of achieving an effective classroom curriculum delivery in our educational system. ICT plays an important role in the work and personal life of the citizens. ICT is described as a range of technology for gathering, storing, retrieving, processing, analyzing and transmitting information (Virkus in Ikemelu, 2015). ICT encompasses a wide range technology based gadgets like telephone (land line and cellular phones) computer, satellite, telex, fax, radio, television, software, hardware, projector, video, bulletin board and microware.etc. Olurunsola (2007) submitted that through ICT educational needs have been met; it changes the needs of education as well as the potential processes.

Gender connotes sexism. It has been an occurring issue for discussion in research, in which its results are inconclusive Fabunmi (2012). Foreman in Okwo (2001) sees sexism as those attitudes and actions which stereotype individuals or groups exhibit because of their sex. Hence, gender refers to sex differences that can be attributed to social, economic, political and cultural factors. It is a socio-cultural variable which provides the theoretical framework for the examination of the differences that may exist between males and females. The differences occur when gender is considered alongside other variable like age, experience, exposure and so on (Luchetta, 2000). Gender is seen as a cultural or psychological variable rather than a biological one determining roles, behaviours, expectations, characteristics and attributes of males and females (Stoller, 1968). The cultural and psychological viewpoints can be regarded as aspects of gender. These and other aspects such as social and political factors act jointly to determine gender roles, identities and stereotypes. The term gender therefore refers to all those social, cultural, psychological, economic and political influences and events which may act synergistically to provide-different roles, goals, values, expectations, attitudes and characteristics for males and females.

On the other hand, Perception is seen as the way one thinks or the ability to understand or notice something or someone. It is the result of observation. Okekeokosisi and Anekwe (2015) referred perception as

organization, identification and interpretation of sensory information in order to represent and understand the environment or the conscious understanding of something.

A person's perception of an event, action, study and teaching style can be influenced by certain factors. The first part of our perception involves the things that grab our attention.

After our attention is gained, however, there are factors that directly affect our perception in interpersonal behaviour and relationships. Experiences and expectations will influence a person's perceptions. Our culture and self perceptions influence the way in which we perceive things. Our knowledge, education and skills for taking in information and sensual experiences will affect our perception. Everything including knowing that a new physical entity can be examined by a set of scientific principles, can determine how we take information and handle it.

Perception in this study directs to the students' perception on the relevance of ICT in teaching and learning in Anambra State.

Information and Communication Technology (ICT) Devices

The ICT devices encompass:

1. Smart devices: They are electronic devices, generally connected to other devices or network through different protocols that can operate to some extent interactively and autonomously. Examples are: Bluetooth, Wi-Fi, 3G, NFC.

Bluetooth: It refers to electronic device used for transferring files or contact details between two phones.

Wi-Fi: It is a device for internet connection. It is increasingly becoming the preferred mode of internet connection all over the world. To access this type of connection, one must have a wireless adapter on their computer to translate data sent into a radio signal. It makes use of radio waves to transmit information across a network.

3G: It refers to the third generation of mobile phone standards, as set by the International Telecommunications Union (ITU). It allows mobile operators to offer more savings option to their users, including mobile broadband. It offers greater flexibility and services by making more efficient use of mobile bandwidth than its predecessor 2G

NFC (Near Field Communication): This is a set of standards for portable devices. It allows the devices to establish peer-to-peer radio communication, passing data from one device to another by touching them or putting them very close together. It is a means of sending data over radio waves. In that sense, it is similar to Wi-fi or Bluetooth.

2. Touch pad: It is an input device which is usually found on a laptop computer. Laptop is made to be portable, people are not always able to attach a traditional mouse. It might be too much hassle or otherwise not be enough room to use one.
3. Joysticks: They were originally used by pilots as part of an airplane's control and technology was developed to let computer gamers experience a more realistic game environment.
4. Touch screen: It is the only device which works as both an input and an output device. Examples: ATM machines, Some smart phones
5. Video Digitizers: It takes an image from a video camera or television and digitizes so it can be read by and stored on a computer.
6. Magnetic stripes reader: They are usually found on the back of the most credit cards, cheque, guarantee cards, loyalty cards and membership cards.etc. The magnetic strip can hold personal details such as account number and name. The strip can contain up to 60 characters stored magnetically.
7. Digital projector: This is a device which connects to a computer and used to project the video output from the computer onto a wall or screen.
8. Plotters: They are a specialist type of printer that draws images using a pen. The electronic pen can be lowered, raised and moved across the paper to form continuous lines. The electronically controlled pen is moved around the paper by computer controlled motors. They are used by engineers, architects and map makers to draw plans of buildings, diagrams of machines or large scale maps.
9. Lights: Lights such as LEDs (light emitting diodes) can be connected to a computer or within equipment and respond to electrical signals which tell them to switch on and off.
10. Printers: They are a common output device. They are used to create a "hard" copy of work, it can be something that one can hold, hand to someone else or file away.
11. Scanners: It is an input device used to capture information such as photographs and documents on paper and translate the information into a computer image. It is a device that optionally scans images, print text, handwriting or an object and converts it to a digital image.
12. Satellite: This is a network that is used to view what is happening around the world. It can be connected to television to view information around the world. It can also be used in internet or cable connection

13. Computers: Computer uses what is called software to perform its duty. Software is an instruction given to the computer to perform a particular task by the programmer.

Shellys Cashman, Gunter and Gunter (2006) identified the roles of ICT in Teaching-Learning as:

- having the potential to transform learning in and beyond the classroom setting. This is because learners can easily interpret and apply what is learnt to their personal experience and occurrences outside the classroom.
- It serves as a medium for teaching and learning
- ICT unleashes creativity and allows independence in learning
- It offers new ways of teaching the same things
- It encourages collaborative learning
- Through the appropriate use of some ICT tools, learners' learning capabilities are addressed
- ICT offers stimulations where the learner can experiment by changing variables
- ICT provides secondary school students with practical and functional knowledge of the computer, the internet and other associated gadgets that will have positive effect on future experience and make them more competent, rational and comfortable in this era of globalization
- It assists learners to react intelligently to future changes, expand information and live successfully in a changing world
- ICT through its multimedia facet, creates room for students to acquire new knowledge, fosters enquiry and exploration of facets and adopt new approaches to teaching and learning
- Facilitates students' acquisition of skills and potentials for active participation in the teaching / learning process
- Enrich the curriculum by replacing the existing face-to-face instruction
- It fosters efficient and effective access of digital information for the purpose of investigating issues and solving problems
- ICT through its multimedia facet, creates room for students' to acquire new knowledge, foster enquiry and exploration of facets and adopt new approaches to teaching and learning
- This conventional system helps to accelerate the learning process, increase teachers' efficiency and effectiveness
- Provides remedial instruction and enrichment of material, thus guarantying higher quality standards in schools

STATEMENT OF THE PROBLEM

The world has become increasingly digitalized and it seems to be a sort of information and communication technology (ICT) invasion ICT has permeated into every sphere of human endeavour and field of education. The application of ICT in educational sector may help to improve teaching and make learning to be enhanced effectively and efficiently. This study is aimed at assessing the relevance of information and technology in teaching and learning as perceived by secondary school students in Anambra State.

PURPOSE OF THE STUDY

The main purpose of the study was to investigate the relevance of ICT in teaching and learning as perceived by secondary school students. Specifically, the study sought to,

- determine the extent to which ICT help students to master basic computer skills
- find out the extent to which ICT fosters students' interest in their studies
- to investigate how much ICT broadens students' career prospects
- ascertain the extent to which ICT enhance students' study habit
- find out the extent ICT fosters teachers' effectiveness

RESEARCH QUESTIONS

The following research questions guided the study,

1. what are the ICT skills relevant for students mastering of basic computer skills?

2. to what extent does ICT foster student's interest in their studies?
3. to what extent does ICT broaden student's career prospects?
4. how can ICT enhance students study habit?

Hypotheses

H₀₁: There is no significant difference between the mean rating of male and female students' perception on the ICT skills relevant for mastering of basic computer skills.

H₀₂: There is no significant difference between the perception of male and female students on the extent to which ICT foster their interest in studies.

Method

The study employed a descriptive survey research design. The study was carried out in Anambra State. The population of the study consist of all the Junior Secondary School 2 (JSS2) students in public secondary schools studying computer studies in Anambra State. Purposive sampling technique was use to select Awka Education Zone for the study. Simple random sampling technique (balloting with replacement) was used to draw 10 co-educational public secondary schools out of 61 co-educational public secondary schools in Awka Education Zone of Anambra State. A multistage sampling was used to select the sample. The sample consist of 10% of the selected co-educational public secondary schools in Awka Education Zone. The total number of the sample used was 156 students. A 30-item structured questionnaire on 4 point Likert rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), Very Low Extent (VLE). The decision rule was such that, any item with a mean rating of 3.50 to 4.00 is regarded as having very high extent, the mean rating score of an item ranging from 2.50 to 3.49 is of high extent likewise that of 1.50 to 2.49 is of low extent while 0.50 to 1.49 is of very low extent. The instrument was trial tested on students' perception on relevance of ICT in teaching and learning. It had appropriate psychometric qualities. The data collected was analysed using mean, standard deviation and t – test.

RESULTS

Research Question 1: What are the ICT skills relevant for students mastering of basic computer skills?

Table 1: Mean rating and standard deviation of the respondents on the ICT skills relevant for students mastering of basic computer skills.

S/N	ITEM	$\bar{X}$	SD	REMARKS
1	Booting the computer	3.52	0.68	Very high extent
2	Shutting down the computer	3.53	0.59	Very high extent
3	Clicking the mouse	3.22	0.94	High extent
4	Double clicking the mouse	3.33	0.83	High extent
5	Dragging the mouse	3.21	6.88	High extent
6	Left clicking the mouse	3.29	0.89	High extent
7	Right clicking the mouse	3.37	0.86	High extent
8	Typing with the keyboard	3.44	0.80	High extent
9	Carrying out some basic computer operations like:			
A	Copying	3.33	0.86	High extent
B	Cutting	3.28	0.84	High extent
C	Pasting	3.28	0.86	High extent
D	Saving	3.40	0.79	High extent
E	Retrieving	3.33	0.81	High extent
F	Printing	3.51	0.65	High extent

Data in Table 1 shows that items in 1 and 2 had a very high extent mean rating of 3.50 to 4.00 and items in 3-9f had high extent mean rating ranging from 2.50 to 3.49. This shows that the respondents upheld ICT helped them to master basic computer skills.

Research Question 2: To what extent does ICT foster student's interest in their studies?

Table 2: Mean rating and standard deviation of the respondents on the extent ICT foster students' interest in their studies

S/N	ITEM	$\bar{x}$	SD	REMARKS
10	ICT enables me to have zeal in my studies	3.09	0.98	High extent
11	I enjoy reading online information	3.25	0.82	High extent
12	Going online is the best approach to my studies	3.22	0.76	High extent
13	I enjoy spending most of my time on the internet	3.44	0.79	High extent
14	All my problems can be solved easily through the internet	2.92	0.82	High extent

The analysis in Table 2 shows that all the items had a high extent mean rating ranging from 2.50 to 3.49. This points that the use of ICT in teaching – learning fosters students' interest in their studies.

Research Question 3: To what extent does ICT broaden student's career prospects?

Table 3: Mean rating and standard deviation of the respondents on the extent ICT broadens students' career prospects.

S/N	ITEM	$\bar{x}$	SD	DECISION
15	ICT helps the students to be creative in life	3.07	0.86	High extent
16	ICT helps students to access the internet for making their career choice	3.23	0.81	High extent
17	ICT helps students to actualize their dreams	3.11	0.78	High extent
18	ICT can help one to work as a pilot	3.36	0.76	High extent
19	ICT can help one to work as a computer scientist	3.53	0.59	Very high extent
20	One can work as a computer technologist	3.48	0.68	High extent
21	ICT can help one to work as a computer analyst	3.53	0.63	Very high extent
22	ICT can help one to work as a computer programmer	3.59	0.56	Very high extent
23	ICT can help one to work as a web designer	3.58	0.61	Very high extent
24	One can work as an aeronautical engineer	3.33	0.81	High extent

Data in Table 3 pine points that items in 15 to 18, 20 and 24 had a high extent mean rating of 2.50 to 3.49. While items in 19, 21 to 23 had a very high extent mean rating of 3.50 to 4.00. This means that all the items in Table 3 indicated that ICT broadens students' career prospects.

Research Question 4: How can ICT enhance students study habit?

Table 4: Mean rating and standard deviation of the respondents on how ICT can enhance students' study habit.

S/N	ITEM	$\bar{x}$	SD	DECISION
25	ICT help students to be computer literate for technological development of the society	3.53	0.59	
26	ICT is an effective tool which enhances the quality of education	3.17	0.84	
27	ICT helps the students to understand what the teacher is teaching easily	3.08	0.79	
28	ICT help students to do their assignments	3.33	0.82	
29	ICT help students to do their projects	3.35	0.76	
30	ICT help students to share their study difficulties with their friends online	3.52	0.68	

The analysis in Table 4 shows that all the items had a high extent mean rating of 2.50 to 3.49 except two items that had a very high extent mean rating of 3.50 to 4.00. This keynotes that ICT promotes students study habit.

H₀₁: There is no significant difference between the mean rating of male and female students' perception on the ICT skills relevant for mastering of basic computer skills.

Table 5: The t-test of the mean rating of secondary school students on ICT skills relevant for mastering of Basic Computer Skills

Gender	N	$\bar{x}$	SD	DF	t-cal	t-crit	DECISION
Male	52	31.36	312.00	154	0.05	1.960	Accept
Female	104	15.68	78.00				Null hypothesis

The level of significance used for the hypothesis 1 is 0.05 as seen in Table 5. The t-cal is 0.05 at 154 degree of freedom. The t-crit is 1.960. The null hypothesis that there is no significant difference between the mean ratings of male and female students' perception on the ICT skills relevant for mastering of basic computer skills. This implies that students had a positive feeling on ICT skills relevant for mastering of basic computer skills.

H₀₂: There is no significant difference between the perception of male and female students on the extent to which ICT foster their interest in studies.

Table 6: t-test of the secondary school students' responses on the Extent to which ICT foster their Interest in Studies

Gender	N	$\bar{x}$	SD	DF	t-cal	t-crit	DECISION
Male	52	47.04	94.08	154	0.05	1.960	Accept
Female	104	47.04	23.52				Null hypothesis

The t-cal is 0.05 at 154 degree of freedom. The t-crit is 1.960. The null hypothesis that there is no significant difference between the male and female perception on the extent to which ICT foster their interest in studies.

DISCUSSION OF FINDINGS

The findings of this study in research question 1 indicated that all the 9F items on students' response on relevance of ICT help in mastering basic computer skills like booting and shutting down of the computer using the mouse and keyboard, copying, cutting, pasting, retrieving and printing of documents. It promotes self reliance and self employed after school.

Secondly, it was found that ICT fosters students' study interest like reading on-line information, spending time on the internet, solving problems through the internet.

From research question 3, ICT broadens students career prospects like working as a computer scientist, computer technologist, computer analyst, web designer, Aeronautical engineer. This is in line with Akudolu (2000) who reported that entrepreneurship education is the acquisition of knowledge, skills and attitude that enable the learner apprehend life challenges in whatever form and take decisive steps to realize new trends and opportunities for meeting those challenges in all aspects of human life.

The study in research question 4 revealed that ICT enhances students' study habit like easily understanding of what has been taught by the teacher, doing assignments, projects and sharing their study difficulties with their friends on-line. The mean scores above the acceptable mean for all the items as seen in table 4 attest to it.

The analysis of the hypothesis as proved in Table 5 and 6 respectively portrayed that there is no significant difference between the mean rating of male and female students in their perception of an ICT skills relevant for mastering of basic computer skills (Table 5). There is no significant difference between the mean ratings of male and female students on the extent in which ICT foster students' interest in their studies (Table 6). This supported the assertion early made by Okekeokosisi and Okeke (2015) that gender discrimination should not affect teaching-learning of students for their actual performance. However, Fabunmi (2012) stated that gender issue had been featuring in different research in which results of many had been found inconclusive. In consonant with Fabunmi (2012) findings made by Barrier and Margivio (1993) found out that there are no gender differences in an introductory computer course in a university setting, despite the author's expectation. Nevertheless, Luchetta (2000) posited that gender differences occur when gender is considered alongside other variable like age, experience, exposure and so on.

Students responses to hypothesis 2 indicates that the use of ICT promoted their interest in their studies. This could be seen in the opinion made by Nwosu and Ogbom in Ezegebe, Idu and Mezieobi (2013) that ICT when used appropriately expounded access to education and rose educational quality by creating an active process connected to real life. Collodi (2006) find out that the use of ICT increased students' understanding of concepts, intensified skills and encouraged transfer of knowledge.

CONCLUSION

ICT is very useful instructional strategy for increasing meaningful teaching and learning. Students should be engaged in proper pedagogical skills, for effective knowledge, attitude and values. The world is increasing in high information technology. Secondary schools should be equipped with computer facilities as well as internet to follow the new trend of teaching-learning. Currently, teachers being trained to teach the secondary school students should be exposed to computer education and in-service training should also be provided to other teachers teaching in primary schools.

EDUCATIONAL IMPLICATIONS OF THE FINDINGS

The result of this study has some educational implications with regards to parents, students, teachers, researchers and ministry of education. Parents should provide computer and internet facilities to their children at home and monitor their effective usage. Students should ensure they use their computers and internet for their studies especially in their take home assignment. Teachers should improve the method of teaching and make it interesting to the students by using whiteboard, projectors and internet in their teaching. Researchers should make use of internet to carry out their research work. In all, the ministry of education is to improve the curriculum's standard by making it available on the internet for easy accessibility of educationist and provide computer teachers and fund for their maintenance.

RECOMMENDATIONS

- Computer / ICT education should be made compulsory for all secondary school students; this will help improve the students' basic computer skills.
- Purchase of adequate number of computers in secondary schools by the assistance of the Educational Trust Fund (ETF) or other means should be solicited for in earnest
- Government should provide a retraining programme for secondary school teachers to meet up with the challenges and demands of the new curriculum

REFERENCES

- Adeobosin, W.G. (2004). *Agricultural Education and Empowerment of Youths for Employment*. A paper presented at the 3rd National Conference Organization by Oyo State College of Education, Oyo.
- Coolodi, J. (2006). E-Government in Africa: prospects, challenges and practices. Retrieved on April 20th, 2013 from www.eldis.org
- Ezegbe, B.N, Idu, G.O & Mezieobi, D.I. (2013). Re-Engineering the Teaching and Learning of Secondary School Government Through the Use of Information Communication Technology (ICT) For Global Competitiveness. *International Journal of Educational Research*. 12(2), 46-60.
- Fabunmi, F.A. (2012). Undergraduate Students' Perception of the Effectiveness of ICT use in Improving Teaching and Learning in Ekiti State University, Ado-EAkiti, Nigeria. *International Journal of Library and Information Science*, 4(7), 121-130
- Federal Republic of Nigeria (2004). *National Policy of Education*. Lagos: NERDC Press.
- Federal Republic of Nigeria (2008). *National Policy of Education*. Lagos: NERDC Press.
- Ikemeu, C.R. (2015). Towards Effective Application of ICT Education for Classroom Curriculum Delivery: Science Teachers Perspectives. *STAN 56th Annual Conference Proceeding*, 230-238.
- Luchetta, T. (2000). Gender and Computing. Tool box or Toy Store Paper presented at the sprint 2000 wisconsin Association of Academic Librarians Conference. April 12th, 2000.
- Madaki, S.D & Nwanze, M. (2015). Information Communication Technology Implications for Vision 20:2020. *Journal of Research in Science and Technical Education (JOREST)*. 1(1), 90-96
- Okeke, O., O.C. & Okeke, C.N.A. (2015). The Effect of Constructivist Teaching Approach on Students' Academic Achievement, Gender and Interest in Junior Secondary Schools Agricultural Science Subject. *Contemporary Journal of Empirical Research*. 1(1), 105-125.
- Olorunsola, E.O. (2007). *Information Communication Technology: A Tool for Effective Management in Nigerian Universities*. *Educ.Focus* 1 (1), 80-87
- Osakwe, R.N. (2006). *Introduction to Teaching Profession*. Benin City: Ethiope Publishing Corporation.
- Shelly, G.B, Cashman, T.J, Gunter, G.A & Gunter, R.E. (2006). *Teachers Discovery Computer: Integrating Technology and Digital Media in the Classroom*. Boston: M.A. Thompson Course Technology.
- Yerokun, O.M. (2015). Role of Information Communication Technology (ICT) Education on National Security. *Journal of Research in Science and Technical Education (JOREST)*. 1(1), 297-304
- Yusuf, M.O. (2005). Information and Communication Technology: Analyzing the Nigerian National Policy for Information Technology. *Intel.Edu. J.* 6(3), 316-332