Implementation of Nigerian Government's Information and Communication Technology Policy on Education in Cross River State Secondary Schools

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Reviewed By: Dr. Daniel V.

Abstract

This study was executed to assess the extent of implementation of ICT education in Cross River State secondary schools. The survey research design was adopted in carrying out the investigation. A sample of 40 secondary schools comprising urban and rural as well as private and public secondary schools was drawn from all the secondary schools in the state. The data for the study were collected using questionnaires and documentary analysis. Those instruments were validated by two lecturers in computer science and one expert in educational measurement and evaluation at the Federal College of Education, Obudu. The reliability coefficients of the students' questionnaire and the Principals' checklist, are .78, .98 respectively. The obtained data were analysed descriptively using simple percentage. The result of the study showed among other things that computer science is not taught in every secondary school in the state; there are no serious measures taken by the state government to ensure the availability of up-to-date computers in the secondary schools in the state; and that most of the students in their ultimate and penultimate years of study in the secondary schools have not yet acquired most of the skills expected of students offering computer science at the secondary school level. The study concluded with the remark that the level of implementation of ICT education in the state is very low. It was therefore recommended inter -alia that the present status of computer science as an elective subject should be changed to a compulsory status at both the junior and senior secondary school levels and that government at all levels should devote a certain percentage of their education budget to the purchase of ICT tools/accessories.

Keywords: Information and communication technology education (ICT), Implementation of ICT education, Availability of ICT tools, Utilization of ICT tools.

1. Introduction

In many countries of the world, Information and Communication Technologies (ICTs) have been put to strategic uses in every sector of the society since the second half of the 20th century. These technologies according to (Rouse, 2011) include any communication device – encompassing radio, television, cellular phones, computer and network hardware, and software, satellite systems and so on, as well as the various services and applications associated with them, such as video conferencing and distance learning. The uses being made of these technologies have brought about what is known as globalizationand any country that fails to become part of this global village is living at the mercy of others.

It is in the bid to avert the ugly impact of globalization on the poor countries, that the

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Nigerian government has taken some measures to be a key player in the global economy.

One of such measures is the introduction of ICT into the school system (FRN, 2004). Thus, at the primary school level the policy statement has it that in recognition of the prominent role of ICT in advancing the knowledge and skills necessary for effective functioning in the modern world, there is urgent need to integrate ICT into education in Nigeria. At the secondary school level, it is also stated that government shall provide necessary infrastructure and training for the integration of ICT in the school system in recognition of the role of ICT in advancing knowledge and skill in the modern world.

Also, according to Adomi and Kpangban (2010) in June 2003, at the African Summit of the World Economic Forum held in Durban, South Africa, the New Partnership for African Development (NEPAD) launched the e-Schools Initiative, intended to equip all African high schools with ICT equipment including computers, radio and television sets, phones and fax machines, communication equipment, scanners, digital cameras, and copiers, among other things. It is also meant to connect African students to the Internet. This NEPAD capacity-building initiative that aimed at imparting ICT skills to young Africans in primary and secondary schools was planned to be executed over a ten-year period, with the high school component being completed in the first five years. Nigeria is one of the African countries that participated in the first phase of this project. Hence, fourteen years after the programme was launched, and nine years after the high school component of the initiative was planned to have been completed, the extent to which it has impacted secondary schools in Nigeria in general and Cross River State in particular deserves investigation. Beside Federal government's interventions, some state governments through their Ministry of Education have also procured and supplied some computer hardware to their secondary schools.

The extent to which these and other laudable ICT interventions have been extended to the various states in the country as well as their impact on ICT competence of secondary school students in Nigeria call for a study of this nature. Even where computer hardware has been supplied to schools, there is still the need to find out what use these tools are put to since implementation of ICT education policy goes beyond mere procurement of tools.

Such a study is necessary given certain remarks being made about the study of computer in secondary schools. For instance, while Aboderin and Olukayode (2014) reported budgetary and funding constraints and lack of trained manpower as some of the factors militating against computer education in schools, Adomi and Kpangban (2010) observed low rate of ICT adoption and application in Nigerian secondary schools. Similarly, Arenyeka, (2012) remarked that Nigerian students seem to be languishing in the dust behind the moving train of the twenty first century as a result of poor computer education in many secondary schools across the country. Moreover, the transformation of Nigeria into a key player in the modern world that is driven by ICT cannot be achieved through the implementation of ICT education policy in a few selected places. Such a transformation can only be realised when every secondary school student in any part of the country is both theoretically and practically exposed to ICT education. Hence, just as the Federal government realised that the subject of globalisation is the issue of internationalisation of technology, so should the subject of ICT in Nigeria be seen as an issue of nationalization (in practice) of ICT education. This study will however be limited to Cross River State.

2. Statement of the problem

The desire to be a key player in the global economy has led the Federal Government of Nigeria into has formulating at different points in time policies on information and communication technology (ICT) as well as following this up by certain interventions. These interventions seem not to have a widespread. The people living outside the major cities in the country and especially the rural populace seem to be marginalised in this regard. Beside Federal government's interventions, some state governments through their Ministry of Education have also procured and supplied some computer hardware to their secondary schools in support of ICT education. There is however no proof that these tools are made use of in the teaching and learning of computer science in many secondary schools. Thus, there are reports that Nigerian students seem to be languishing in the dust behind the moving train of the twenty first century as a result of poor computer education in many secondary schools across the country and that many schools in Nigeria lack up to date computer technology whereas many of those

that have computers have little or no access to electricity (Arenyeka, 2012).

These unsavoury remarks about the state of ICT in the nation's secondary schools seem to suggest that the education component of the Federal Government's ICT policies have either been drowning at the shores of implementation or at best been implemented selectively. In Cross River State in particular, it seems that some secondary schools are deliberately left out in the teaching and learning of computer science. The problem of this study therefore when posed as a question is: To what extent is the Federal Government's ICT Education policy being implemented in Cross River State secondary schools and what measures are taken by the state government to ensure that every secondary school leaver is computer literate?

3. Purpose of the study

The purpose of this study was to evaluate the implementation of Federal Government's policy on Information and Communication Technology Education in Cross River State. Specifically, the study was designed to:
1. Investigate what ICT tools are available in secondary schools in Cross River State.
2. Ascertain the extent of use of the available ICT tools in the teaching and learning of ICT/ computer science in the colleges.
3. Determine what percentage of teachers in the state are trained to teach ICT/Computer Science in secondary schools.
4. Ascertain what financial provisions are made by the government to guarantee up-to-date ICT tools for the teaching and learning of computer science in the secondary schools in the state.
5. Determine the extent of mastery of computer skills by Cross River State secondary school students in their final and penultimate years of study.

The significance of this study lies in the fact that its findings will reveal to the government the extent to which its ICT educational policy is being implemented in this part of the country. This will serve as a basis for the government toreview its policy implementation strategies. Knowledge of the current state of ICT education in our secondary schools will also enable Directors of industries contribute their quota toward the production of ICT

competent labour force which they need for enhanced efficiency and increase productivity.

On the part of the students, effective implementation of ICT education at the secondary school level will equip those who cannot proceed to tertiary institutions with relevant skills needed for self-employment. It will on the other handequipthose who can afford to proceed to higher institutions with the knowledge to write their entrance examinations confidently especially now that the Universal Tertiary Matriculation Examination has become computer based.

The scope of this study is limited to the availability of ICT tools and accessories needed for the creation, communication, dissemination, storage and management of information as well as the use of these tools in the teaching and learning of computer science. This is due to the fact that at secondary school level of education,ICT education is basically concerned with the study of computer science.

The study was guided by the following research questions:

1. What ICT tools are available for the teaching of Computer Science in Cross River State secondary schools?
2. To what extent are the available ICT tools utilized in the teaching of computer science in the secondary schools?
3. What percentage of teachers in Cross River State secondary schools are trained to teach computer science?
4. What measures are taken by the state government to ensure the availability of up-to-date ICT tools in the secondary schools?
5. To what extent have students in their final and penultimate years in Cross River State secondary schools acquired the computer skills expected of secondary school leavers?

4. Literature Review

The Federal Government of Nigeria has severally made some policy statements on the introduction of ICTs or computer education in schools and colleges. Thus, as far back as the year 1988 a national policy on computer education report was issued (Federal Ministry of Education, 1988). This report has it that primary school pupils should be introduced into

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basic computer namely computation, data entry, text writing etc. the secondary schools were also expected to pursue these goals but at a higher level whereas tertiary institutions schools were expected to teach computer science as a course of study.

According to the ToscanyAcademy (2012), at some point in the 32nd ministerial committee conference of the nationwide convention on Education in 1987, the Federal government of Nigeria decided to establish computer education into the country's secondary school structure. This was tracked by the investiture of the National Committee on Computer Educationthat same year. The purpose of the committee comprises planning for a dynamic policy on computer education and literacy in Nigeria as well as devising clear strategies and terminologies to be used by the federal and state governments in introducing computer education. Its broad spectrum objectives included:

- To convey computer literacy to the Nigerian society by the mid-1990s.
- To allow current school children to welcome and use the computer in a variety of facets of life and in upcoming employment

Toscany Academy, remarks further that the nationwide Computer Policy stipulated that the first ideal to achieving these objectives was to make certain that the general public welcomes the impact of information technology (IT) on our society, the significance of its efficient utilization, and the expertise that develop, supervise, and convey the information. The second broad-spectrum goal was to make certain that Nigerians will be acquainted with the knowledge of how to operate and program computers, build up software packages, appreciate the configuration and function of computers and their historical record, and to understand the profitable, societal and emotional impact of the computer.

The National Policy on Computer Education (NPCE, 1988), stipulates the objectives of computer studies in schools to include:

- The development of rudimentary knowledge about information system, information processing techniques and the role of computer in this regard.
- To impart the knowledge about the use of computer and its applications in everyday life and to develop in the learner an appreciation of computer work.

- Creating an understanding of the concept of programming language and their application through problems solving methods and techniques as they apply to the programme design, coding and documentation.
- To develop reasonable level of competence in ICT applications that will engender entrepreneurial skills.

In the fourth edition of the National Policy on Education,the Federal Government of Nigeria also highlighted the policy of introducing ICT into the school system (FRN, 2004) At the primary school system, the policy states that in recognition of the prominent role of ICT in advancing knowledge and skills necessary for effective functioning in the modern world, there is urgent need to integrate ICT into education in Nigeria. At the secondary school level, it is also stated that the government shall provide necessary infrastructure and training for the integration of ICT in the school system in recognition of the role of ICT in advancing knowledge and skills in the modern world.The Federal Ministry of Education (2004) also identifies government's measure towards the realization of this plan to include providing basic infrastructure and training at the primary school, the making of computer education a pre-vocational elective at the junior secondary school, and a vocational elective at the senior secondary school. It was also the intention of government to provide infrastructure and training for the integration of ICTs in the secondary school system

In line with the Federal Government's policy of introducing the teaching and learning of computer in our educational institutions, computer education is today one of the school subjects offered at some primary and secondary schools in the country. At the tertiary education level, it has become one of the elective courses for every student and as well as a course of specialization for some students who choose to study it. Also, the Federal Ministry of Education has launched an ICT-driven project know as School Net with the intention of equipping all schools in Nigeria with computers and communications technologies (Federal Republic of Nigeria, 2006)

Despite the fact that the study of computer is now going on in some of Nigerian schools and colleges, Jegede & Owolabi (as cited in Aboderin & Olukayode, 2014) have observed that reasonable computer studies are yet to start in

Nigerian secondary schools, the computer-student ratio is small, funding by government has not been encouraging ,computer education syllabus is unpopular among students and parents and thus hardly implemented, and teachers are inadequate to implement computer education. On their own part, Bamidele&Bakare (2015) after a study of the impediments on the implementation of computer science education curriculum in public secondary schools in Osun state, Nigeria, submitted that since the introduction and integration of ICT into the secondary school curriculum in Nigeria, computer education as a subject was not taught in most public secondary schools in the country.

Adomi&Kpangban (2010) in their study of application of computer in Nigerian secondary schools remark that although efforts have been made to ensure that ICTs are available and used in Nigerian secondary schools, the level of uptake is still low.

In a study that investigated the factors militating against the implementation of computer education in secondary schools in Ondo State, Nigeria Aboderin and Olukayode (2014) foundamong other things that computer resources were lacking in schools, budgetary and funding constraints were militating against computer education in schools; there was lack of trained manpower in teaching computer education in schools; and that there was no adequacy of time for the computer lessons on the timetable similarly, Olokoba, Abdullahi, and Omosidi, (2014) after studying the impact of information communication technology (ICT) on the management and performance of secondary school teachers in kwara state, Nigeria, reported that almost all the required ICT facilities are not available in the schools and that there were no functional computers. Moreover, specially trained personnel to expose teachers to ICT skills did not even exist in most cases whereas the few available computers were used for administrative purposes.

On their own part, Mavellas, Wellington, and Samuel (2016) in a study entitled assessment of the availability and utilization of icts for teaching and learning in secondary schools - case of a high school in Kwekwe, Zimbabwe that most ICTs required for training are not available at all, and those that are available are inadequate. It also revealed that the available ICTs are being utilized to a very low extent.Similarly, Mungai (2010) has

identified lack of qualified teachers, lack of electricity, inadequate computers, breakdown of the computers, higher prices for the procurement of ICT resources, burglary, computer phobia by both administrators and teachers as factors that are hindering utilization of ICT in his country. Also, Daramola and Adegbija (2012) reported inadequate ICT devices and poor ICT aids infrastructure as some of the obstacles facing both teachers and students in their investigationof the problems facing the use of ICT among students and teachers in public and private secondary schools in Ilorin East Local government area, Kwara state.

Langat (2015) identified barriers hindering implementation of ICTs to include shortage of infrastructure and resources, shortage of teachers, lack of clear digital curriculum, political factors, poor timing and poor planning, high cost of implementation, communication barriers , corruption, moral issues and high crime rates. Adomi and Kpangban (2010) also attributed the absence of ICT equipment in the secondary schools to the patronage of cybercafés for Internet access by students.

5. Methodology

This study was aimed at describing the current status of information and communication technology in secondary schools in cross River State. Its design therefore is the descriptive research design. The population of the study comprised all public and private secondary schools, in the state.The sample for the study consisted of 40 secondary schools out of a population of about 625 public and private secondary schools in the state. Forty principals, 400 teachers, and 400 students drawn from these schools using the stratified random sampling technique constituted the sample for the study.

The data for the study were collected using the teachers' questionnaire, students' questionnaire, checklist and documentary analysis. The questionnaires and checklist were constructed by the researcher after a thorough search of the literature. Teachers and students' questionnaires were used to collect information from the students and the teachers respectively. The disposition of teachers in the state secondary schools were obtained through the analysis of documents from the state ministry of education. This analysis was used to authenticate the information supplied by the

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teachers.These instruments were validated by two computer science lecturers in the Federal College of Education Obudu. Reliability coefficients of .78 and .98were computed for thestudents' questionnaire and the principals' checklist respectively.The researchers administered the instruments with the help of two research assistants.Some of the completed instruments were retrieved on the spot whereas some were collected later where on the spot collection was not possible.The data obtained in the course of the study were analysed descriptively using simple percentage.

6. Results

The results of the study are presented below according to the research questions.

Research Question 1: What ICT tools are available for the teaching of ICT in secondary schools in Cross River State?

In order to answer this question, table 1 shows the number and percentages of schools in which the mentioned tools are available as well as the number and percentages lacking the tools mentioned.

Table 1: Number and Percentages of Schools Possessing the Mentioned ICT Tools (N-40)

S/N	ICT TOOL/ACCESSORY	YES	%	NO	%	DECISION
1	Desktop Computers	31	77.5	9	22.5	Available
2	Laptop Computers	16	40	24	60	Not Available
3	Television	8	20	32	80	Not Available
4	Radio	8	20	32	80	Not Available
5	Scientific Calculators	9	22.5	31	77.5	Not Available
6	Handsets	16	40	32	60	Not Available
7	Generator Sets	36	90	4	10	Available
8	Stable Electricity	7	17.5	33	82.5	Not Available
9	Internet Service	10	25	30	75	Not Available
10	Keyboards	30	75	10	25	Available
11	Printers	29	72.5	11	27.5	Available
12	UPS	25	62.5	15	37.5	Available
13	Mouse	31	77.5	9	22.5	Available
14	Photo Copier	24	60	16	40	Available
15	Scanners and Faxes	14	21.5	26	88.5	Not Available
16	Cooling Fans	21	52.5	19	47.5	Available
17	Air Conditioners	4	10	36	90	Not Available
18	Computer speakers	15	37.5	25	62.5	Not Available
19	Blank Discs	12	30	28	70	Not Available
20	Educational Soft wares	17	42.5	23	57.5	Not Available
21	Hard Drives and Storage	18	45	22	55	Not Available
22	Gaming Accessories	7	17.5	33	82.5	Not Available
23	Computer Textbooks	29	72.5	11	27.5	Available
24	Graphic Tables and Digital pens	4	10	36	90	Not Available
25	USB Flash Drives	19	47.5	21	52.5	Not Available
26	Surge Protectors	10	25	30	75	Not Available

Table 1 shows the number and percentages of students agreeing to the various extents to which they study computer science practically. The emphasis on holding lessons in thelaboratory here is based on the practice whereby ICT tools are stored and used for practical lessons there.

Table 2: Extent of Study of Computer Science Practically using the Available Tools

S/N	ITEMS	ALWAYS NO (%)	RARELY NO (%)	NEVER NO (%)
1.	Practical lessons in computer are held in computer laboratory	56 (26)	65 (30.2)	94 (43.7)
2	We often hold practical lessons in computer science	25 (12)	81 (38.8)	103 (49.2)
3	Students manipulate computers during practical lessons	46 (21.6)	64 (30)	103 (48.4)

Table 2 shows that a greater percentage of the respondents are either of the view that computer lessons are never taught practically in computer laboratory or are rarely taught there. Also, 49.2 % of the respondents are of the view that they often hold practical lessons in computer whereas 38.8% say they rarely have practical lessons in computer. These are against the 12% of respondents who say that practical lessons are always held in computer science. Similarly, while 48.4% say that students never manipulated the computer during practical lessons, 30% say they rarely manipulated the computer and 21.6 % say they always manipulate the computer during practical lessons. The relatively high percentage of respondents that indicated rarely and never in the three items points to the fact that the available ICT tools are not effectively utilised in the teaching and learning of computer science in the secondary schools.

Research Question 3: What percentage of teachers in secondary schools in Cross River State is trained to teach computer science?

The answer to this research question was obtained through documentary analysis whereby the list of public secondary schools in the state and their teachers as well as the teachers' subjects of specialisations were obtained and counted. Table 3 shows the result of the analysis.

Table 3: Number and Percentage of Teachers in Cross River State Secondary Schools that Specialised in Computer Science

School Type	No of Schs.	No of Teachers	No of Compt. Sc. Teachers	% of Compt. Sc. Teachers
Conventional Sec. Schools	229	5108	91	1.8
Technical schools	18	737	10	1.4
Total	247	5845	101	1.7

Table three shows that out of a total number of 5,108 teachers in conventional secondary schools in Cross River State, only 91 teachers representing 1.8% studied computer science in tertiary institution. Also, out of a total number of 737 teachers in technical secondary schools in the state, only 10 representing 1.4 % studied computer science in tertiary institutions. On the whole, only 101 out of a total of 5,845 representing 1.7% of secondary school teachers in the state are trained to teach computer science.

Research Question 4: What measures are taken by the state government to guarantee the availability of up- to-date ICT facilities in the secondary schools?

. Responses from respondents in this respect are shown in table 4.

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Table 4 : Number and percentages of Responses on Measures Taken by the Government to Guarantee up-to-date computers in Secondary Schools.

S/N	Items	True No (%)	False No (%)	Decision
1	Yearly supply of computers to schools	60 (15.5)	328 (4.5)	Reject
2	Principles are given special ICT intervention	30 (7.8)	356 92.2)	Reject
3	Principals retain part of school fees for procurement and maintenance of ICT facilities	96 (25)	289 (75)	Reject
4	PTA supplies/maintains ICT facilities	96 (24.8)	291 (75.2)	Reject
5	Students are levied for procurement and maintenance of ICT facilities	67 (16.9)	330 83.1)	Reject

Table 4 shows that none of the measures expected to be taken by the state government to guarantee the availability of up-to-date ICT facilities in secondary schools is being taken.

1. Research Question 5: To what extent have students in their final and penultimate years in Cross River State secondary schools acquired the computer skills expected of secondary school leavers?

Table 6 shows the responses of students in their final and penultimate years in secondary schools who are offering computer science.

Table 5: Number and Percentages Showing Final and Penultimate Years' Students' Performance in the Various Skills Expected of Secondary School Students on Graduation.

S/N	SKILLS	MASTERED NO (%)	NOT MASTERED NO (%)	DECISION
A	**Computer operation and Concepts:**			
1	Identify hardware components	84 (72.4)	32 (27.6)	Acquired
2	Describe the functions of dropped down menus	50 (44.2)	63 (55.8)	Not Acquired
3	Start applications and create documents	76 (65)	41 (35)	Acquired
4	Name and save documents in appropriate folders	83 (70.9)	34 (29.1)	Acquired
5	Retrieve saved documents	62 (54.4)	52 (45.6)	Acquired
6	Print documents	62 (53.4)	54 (46.6)	Acquired
B	**Word Processing:**	NO (%)	NO (%)	
7	Locate and use enter, space, delete , backspace ,etc. keys	94 (80.3)	23 (19.7)	Acquired
8	Type sentences without assistance	74 (62.2)	45 (27.8)	Acquired
9	Select, cut copy and paste text	69 (58.2)	49 (41.5)	Acquired
10	Change margins and line spacing	53 (47.3)	59 (52.7)	Not

No	Item			Status
11	Vary font sizes and styles	43 (38.1)	70 (61.9)	Acquired Not Acquired
12	Use bullets and numbering	43 (37.8)	71 62.2)	Not Acquired
13	Add tables to documents	40 (34.8)	75 (65.2)	Not Acquired
C	**Graphics**:			
14	Use drawing tools	37 (32.7)	76 (67.3)	Not Acquired
15	Use text tools	36 (33)	73 (67 0)	Not Acquired
16	Select objects with selection tools	45 (38.1)	73 (61.9)	Not Acquired
17	Crop selected objects	31 (28.7)	77 (71.3)	Not Acquired
18	Use fill patterns/colours	52 (48.6)	55 (51.4)	Not Acquired
19	Insert graphics from various sources	35 (32.4)	73 (67.6)	Not Acquired
20	Move clip art within a document	36 (33.0)	73 (70.0)	Not Acquired
D	**Multimedia:**			
21	Create simple slideshow	36 (34.0)	70 (66.0)	Not Acquired
22	Insert slides	37 (33.9)	72 (66.1)	Not Acquired
23	Use navigation buttons	45 (40.5)	66 (59.5)	Not Acquired
24	Choose appropriate slide design	43 (39.5)	66 (40.6)	Not Acquired
25	Add sounds	56 (52.3)	51 (47.7)	Acquired
E	**Internet:**			Not
26	Use prepared bookmarks	36 (41.4)	51 (58.6)	Acquired
27	Describe the structure of web address	45 (41.7)	63 (58.3)	Not Acquired
28	Use back, forward, stop, search, etc as features of web browser	51 (46.4)	59 (53.6)	Not Acquired
29	Use key words to search for information	66 (61.7)	41 (38.3)	Acquired
F	**E-mails**			
30	Retrieve e-mail	38 (34.5)	72 (65.5)	Not Acquired
31	Send e-mail	44 (42.3)	64 (57.7)	Not Acquired
32	Forward an e-mail	38 (34.9)	71 (65.1)	Not Acquired
33	Send an attachment with an e-	33 (30.6)	75 (79.4)	Acquired Not

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	mail			Acquired
G	**Spread sheet:**			
34	Describe such terms as row, column, cell etc.	40 (35.4)	73 (64.6)	Not Acquired
35	Label cells appropriately	26 (24.3)	81 (75.5)	Not Acq.
36	Undertake basic calculations	47 (42.3)	64 (57.7)	Not Acquired
37	Change column width and row height	31 (28.7)	77 (71.3)	Not Acquired
38	Add/ delete columns and rows	51 (46.8)	59 (53.6)	Not Acquired
S/N	SKILLS	MASTERED	NOT MASTERED	DECISION
39	Sort data	33 (31.7)	71 (68.3)	Not Acquired
	Data Base:			
40	Explain the purpose of databases	42 (38.2)	68 (61.8)	Not Acquired
41	Open and use commercial database e.g electronic encyclopaedia	27 (25.2)	80 (74.8)	Not Acquired
42	Locate specific information in database	30 (28..0)	77 (72.0)	Not Acquired
43	Explain such terminologies as field, records and files	38 (35.2)	70 (64.8)	Not Acquired
44	Use 'find function' to locate specific information	39 (35.5)	70 (64.2)	Not Acquired

Table 5 contains eight topics with some 44 skills expected to be acquired through the eight topics. Ascrutiny of the table shows that out of the eight topics expected of senior secondary school students to master by the end of their secondary education, students in their penultimate year have mastered one namely computer operation. On the whole, the table shows that out of 44 skills, the students have mastered only 10. It goes to say therefore that the students in Cross River State secondary schools as at the end of their fourth year have not acquired most of the computer science skills expected of them.

7. Discussion of Results

The first research question was aimed at finding out the available ICT tools in Cross River State secondary schools. The findings show that out of 26 computer accessories investigated, only 9 are available in a few schools. These include desk top computers, generator sets, computer keyboards, printers, UPS, mouse, photo copiers, cooling fans and computer textbooks. The absence of a greater number of computer accessories in most of the schools show that lack of ICT tools is a factor militating against effective implementation of computer education in the state secondary schools. This finding is in line with that of Aboderin and Olukayode (2014) who found that computer resources were lacking in schools after investigating the factors militating against the implementation of computer education in secondary schools in Ondo State, Nigeria. The second research question sought to know the extent to which the available ICT tools are being utilized in the teaching of computer science in secondary schools in Cross River State. The finding in this regard shows that the available

ICT tools in most of the secondary schools are not put to maximum use in the teaching of computer science whereas some others do not even make any use of the available tools. The disappointing dimension of this is the fact that even in some of the schools that are specially designated to offer computer science, and as such are well equipped with ICT facilities, computer science is not being taught. Three of such schools in three local government areas respectively attracted the attention of the researchers. Two of these schools, lacked teachers to teach the subject and hence, the facilities are lying waste. The third school has a trained computer science teacher who preferred to teach his second subject of specialization for fear of being held responsible in the event of any damage to or theft of the facilities as is the case in a neighbouring secondary school. This finding of none-use of available facilities agrees with that of Mavellas, Wellington, and Samuel (2016) who revealed that the available ICTs are being utilized to a very low extent in Zimbabwean secondary schools.

Research question three investigated the percentage of teachers in in Cross River State that are trained to teach computer science. The finding in this respect was that only 1.7% of the teachers in Cross River state secondary schools studied computer science/ICT in tertiary institutions. This is irrespective of the fact that a good number of the teachers claimed that they can teach the subject. Some of those teachers acquired a faint knowledge of the subject through seminars and workshops. This apparent absence of adequate number of computer science teachers agrees with the findings of Mungai (2011), Langat (2015), Aboderin and Olukayode (2014) that availability of trained manpower in teaching computer education in schools are among the factors hindering the utilization of ICT in schools.

Research question four was devoted to finding out the measures taken by the state government to guarantee the availability of up-to-date computers in the state secondary schools. It was found that none of the five suggested measures that border on either provision of computers to the schools or making funds available to the school heads for the procurement and servicing of computer systems in the schools is employed by the state government. This means that the government is not taking sufficient steps to ensure the availability of ICT tools in the state secondary schools. This finding lends credence to that of Aboderin & Olukayode, (2014) who identified budgetary and funding constraints to be among the factors militating against computer education in schools.

Another major finding of this study is that majority of students in their ultimate and penultimate years of study in the secondary schools have not acquired most of the skills expected of them on completion of their secondary school education. Thus out of the forty four skills shown in table 5 most of the students have acquired only tenacross the eight topics indicated. This goes to buttress the comment by (Arenyeka, 2012) that Nigerian students seem to be languishing in the dust behind the moving train of the twenty first century as a result of poor computer education in many secondary schools across the country.

8. Conclusion

Despite the avowed desire of the federal government of Nigeria to pursue vigorously ICT education at all levels of education as a means of making the country a key player in the global economy, little effort is made practically in Cross River state to realize this objective at the secondary school level. Most of the secondary schools have by design been ruled out from offering computer science as a school subject. In such schools, there are no trained computer science teachers, no computers, and no computer tools and facilities. Worse still is the fact that in some other secondary schools that are specially designated to offer computer as one of the school subjects, the only practical step taken towards the teaching of the subject is the deposition of a few computers in those schools. The available computers in most of such schools are therefore not utilized due to lack of trained teachers among other factors. In the few schools where computer science is taught, the number of students offering the subject at the SSCE is very low. This apparent lack of seriousness in the teaching and learning of the subject at this level has given rise to non-acquisition of the expected skills on the part of the few students offering the subject. It goes to say therefore that the level of implementation of ICT education in the state is very low.

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9. Recommendations

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

1. The present status of computer science as an elective subject should be changed to a compulsory status at both the junior and senior secondary school levels and offered in every secondary school in the country.
2. The government at all levels-Federal, State, and Local Government should devote a certain percentage of their education budget to the purchase of ICT tools/accessories.
3. The State and Federal governments should as a matter of urgency recruit trained computer teachers into the secondary schools and ensure that every secondary school has at least one competent computer science teacher to obviate the problem of lack of trained teachers.
4. Computer science should be taught with a view to enabling students acquire practical skills as against laying emphasis on theoretical knowledge.
6 Any teacher that studied ICT/ computer science at any higher institution should not be allowed to teach another subject other than computer science.
7. School principals should be allowed to withhold a certain percentage of the school fees for the maintenance of ICT equipment in their schools.
8. A credit pass in computer science at the WAEC/NECO should form part of students' entry requirement into higher institutions.

References

Aboderin & Olukayode, S. (2014). Factors militating against the implementation of computer education in secondary schools in Ondo state, south west Nigeria. Global Journal of Human- social Science: Linguistic and Education. Vol.14, version 10 (Online ISSN 2249-22460)

Bamidele, E. F. & Bakare, O. O. (2015). Impediments on the implementation of computer science education curriculum in public secondary schools in Osun state Nigeria. Asia Pacific Journal of Education, Arts and Sciences vol. 2, No. 4.October 2015. From www.apjeas.apjmr.com/wp.content/uploads/.../AP.JEAS

Adomi, E. E. & Kpangban, E. (2010). Application of ICT in Nigerian secondary schools. From www.webpages.uidaho.edu/-mbolin/adomi-kpanbgan.htm

Arenyeka, L. (2012). Forgotten aspects of education From www.vanguardngr.com/2013/01/forgotten-aspects-of-education-1/

Daramola, F. O. &Ademila, M.V. (2012). Use of information and communication technology in seldected secondary schools in Ilorin East Local Government Area. Kwara State Journal of Research in Education 1 (2) 114-122.

Federal Ministry of Education (1998).Report on national policy on computer education. Lagos:Author

Federal Ministry of Education (1988). Nigerian national computer policy. Lagos: Author

Federal Republic of Nigeria (2004). National policy on education (4th ed.). Abuja:NERDC

Federal Republic of Nigeria (2006).Government in action. From …www.nigeriafirst.org/article 2090.html

Langat, A. C, (2015). Barriers hindering implementation, innovation and adoption of ict in primary schools in Kenya. From http:// ijrst,org

Mavellas, S., Wellington, M., Samuel,F. (2016), assessment of the availability and utilization of icts for teaching and learning in secondary schools: Case study of a high school in Kwekwe, Zimbabwe. International Journal of Science and Technology Research vol.5 (05), May 2016. From www.ijstr,org>finalprints--->Media-Influence-On-...

Israel, Paul Chijioke (Ph.D)[1], Mrs Israel, Happiness Cherechi[2]

Mungai, M. (2011). Tweve challenges facing computer education in Kenyan schools. From www. ictworks@wayan@wan.com

Olokoba, A. A., Abdullahi. A. M., &Omosidi, S. A. (2014). Impact of information communication technology (ICT) on the management and performance of secondary school teachers in Kwara state, Nigeria. *International Journal of Education Learning and Development* 2 (3), 60-67

Rouse, M. (2011). ICT4D (Information and Communication Technology for Development) From www.whatis.techtarget.com>definition>ICT DInformation

Toscany Academy. (2012). Computer education in Nigerian secondary schools. From www. To scany academy.com