



THE EXTENT OF AVAILABILITY AND USE OF COMPUTERS AND THEIR IMPACT ON STUDENTS PERFORMANCE IN PUBLIC AND PRIVATE SECONDARY SCHOOLS OF GOMBE METROPOLIS

Timothy Umar Maigari ,Wallace Ebinum Ossai and Bolanle Adejumo

Computer Department,
Federal College of Education (Technical), Gombe, Gombe state
Email: timmymaigari@gmail.com

ABSTRACT

This study investigated the extent of availability and use of computers and their impact on students' performance in public and private secondary schools. The study was designed to find out some factors that are responsible for any difference between the two types of schools. In order to do this effectively, five research questions were asked and answered. The literature related to the study was reviewed under the following factors. Areas where computer is used, kinds of software/Application programs, spread sheet, internet, graphical packages, attitudes of students towards computer learning and computer studies curriculum. The design of the study is survey in nature. The area of the study is Gombe metropolis. The population of the study is all the secondary school students of Gombe metropolis. The sample of the study was 100. Questionnaire is the instrument used for data collection. The instrument was validated by core researchers and some lecturers in school of Science Education, FCE(T) Gombe. The reliability of the instrument was obtained using test – retest method. Conclusively students in public schools use more computer than students in private secondary schools which indicate better achievement by students in public school.

INTRODUCTION

Science teaching is fundamental to the technological development of any nation whether developed, developing or underdeveloped. The present situation in Nigeria in which learners' record poor academic performance in science may not be isolated with inappropriate science teaching Aladejana (2006). This corroborates the findings of Adegboyega & Adeoluwa (2020) that below average performance of students could be attributed to the way they have been taught. Computer being the live wire of major happening in the society is used in various fields. For instance in Engineering, medicine, commercial purposes, security, school learning,

administration, communication networks, brewing to mention but are few. With the knowledge of computer education the problem of school record such as administration register, staff record, fees, registrations, school account etc can be prepared, amended, updated with the computer.

Ogwo, Maidoh and Onwe (2015) stated that the advantages of Computer Education in schools are for information storage, audio-visual aids in teaching, enhancement of communication among students, teachers and parents, easy, effective and better presentation of information. From the foregoing a well programmed science education is needed to achieve the above knowledge for the development of technological growth in the country. Olalekan (2014) asserted that the best of building a country to be scientifically and technologically mounted is to strengthen science education. Computer education has now been introduced into most Nigerian secondary schools but has not been made compulsory in the West Africa examination council (WAEC)'s syllabus is more challenging because, everybody want to be computer literate. Computer learning comprises both theoretical as well as practical aspects, unlike formerly when the use of computer was associated with big companies and other financial houses.

In Nigeria, the Federal Government saw the need of computer in schools and introduced Computer Education into the nation's secondary school system in August 1988 through the policy enactment of the National Computer Policy in which the objectives are to ensure literacy in computer education at the secondary school level; and help meet with the demand of our time and technological development. To achieve the objectives of introducing Computer Education in secondary school curriculum, the Federal Ministry of Education in Nigeria had spent a great amount of money on Computer studies by providing computer sets, accessories and also launched an Information Communication Technology (ICT)-driven project which is known as School Net (Adomi & Kpangban, 2010). The introduction of Computer Studies in the secondary schools' curriculum in Nigeria has paved way for students' exposure to information Communication Technology (ICT). As there is a growing demand on the use of computers in secondary schools, a great number of students are happy and eager to learn how to operate computers while some are afraid to operating computers. Hence, despite having basic skills and knowledge in computer, some students feel anxious while using computer to accomplish their tasks, as fluent interaction with computer interface requires both the basic understanding of computer concepts as well as the

basic familiarity with hardware and software. It is against this background that the study is intended to investigate the extent of availability and the use of computer in Public and private secondary schools in Gombe metropolis.

For the past decades, computer learning was not part of the curriculum of Nigeria secondary schools but because of the dynamic nature of the world, technology had changed rapidly and Nigeria is welcoming the change to enjoy all the facilities that computer provides. Even though computer education has been introduced into the curriculum of both public and private owned secondary schools in Gombe State, there is need for research evidence on the extent of availability and use of computer in teaching the subject. In question form, the problem of this study is: To what extent are Computers available in public and private secondary schools in Gombe state, how are these computers utilized in the teaching of the subject and what are the impacts on students' performance?

When these schools were set up, it was the desires of the different owners of the secondary schools and community that the students should learn the things that are required of them to know. This is in-line with the findings of Johnson (2016) that established a significant relationship between school effectiveness and learning achievement. It implies that there is a relevant relationship between how much students perceive the adequacy and relevance of Computer Science curriculum and the technical skills they possess. It means that the more updated the curriculum is, the more relevant it becomes to the industry and the better the technical skills of the students.

This study is aimed at investigating the extent of availability and use of computer and the impact on students' performance in Public and private secondary schools in Gombe metropolis.

Consequently, in carrying out the study, the researcher intend to:

- i. Find out if the Public and private secondary schools in Gombe metropolis have computers.
- ii. Determine what the computers are used for in these schools.
- iii. Find out the kind of software package and applications programs learned in each of the school types.
- iv. Find out the problems encountered by students in the study of computer as a school subject.
- v. Find out the impact of the availability of computer on students' performance

This study is undertaken and limited to Senior Secondary Students of Public and privately owned secondary schools in Gombe metropolis and not the entire State. The schools include: GSSS Gombe, GSSS (ii) Gombe, Amadu Gombe Secondary School, Joy Academy, Alheri Model School and Kanady Academy.

RESEARCH QUESTIONS

The following research questions were posed and answered in the following course of the study.

- i. To what extent are computers available in Public and private secondary schools?
- ii. What are the computers used for in these schools?
- iii. What kind of software packages and application programs are learned by students?
- iv. What problems are encountered by students in the study of computer as a school subject?
- v. What are the impacts of the availability of computer on students' performance?

RELATED LITERATURE

Not much research have been carried out on the extent of availability and use of computers in two different categories of secondary schools, that is, Public School and Private School.

However, there is a handful of information gathered from empirical literature, which are those writings that are outcomes of empirical research i.e. observation which is the process of collecting data for research by obtaining views, opinions, ideas or feeling from people through interview, observations and questionnaires.

Computer Labs are instrumental in helping students Learn, work with software programs, complete assignments and interact with their instructors. The inadequate and obsolete teaching and learning facilities used today militate against good performance in science Oloruntegbe & Alake (2010). This is further corroborated by the findings of Adegboyega (2020) that below average performance of students could be attributed to the way they have been taught.

In some of the secondary schools, computer laboratory is not equipped. In some private schools the rooms are too small to accommodate all the equipment intended for computer learning. Because of this not all the equipment are being displayed, which leads to some of the equipment

being kept in a casing without usage till it becomes obsolete. Technology oriented classroom can be used as a tool to overcome the traditional isolation of the classroom setting and improve overall productivity as confirmed by the work of Aladejana (2008).

Computing has taken the center point in all fields of human endeavour (Patacsil & Tablatin, 2017). The Bureau of Labour statistics (BLS) in the United States identified computer and data processing services to occupy eight of the top ten fastest growing occupations between 2000 and 2001 (BLS, 2001). Also, Parker, (2006) noticed that graduates of computing generally have up to three or four job offers with salaries higher than that of their contemporaries from other disciplines. This was corroborated by the result of a study carried out on the skill sets required on the job in Nigeria where it was reported that Information Technology skills is one of the highly required skills in the Nigerian labour market (Stutern, 2016). We are witnessing a tremendous growth in the use of information technology in teaching and learning. We now use computer for Computer Assisted Instruction (CAI), as an active not passive instructional medium, computer can also be used for computer managed instruction (CMI) which is used in testing, record keeping and decision making that assists effective administration. The role of computer assisted programmes and simulations include motivating students' interest, stimulating learning and independence as highlighted by Yilji & Wadaki (2008), Alake (2020). Several packages like word processing, spreadsheet, graphics packages and lots of others are being taught at the secondary level. Word processor is "a computer program used for editing texts, checking and correcting grammar, style, and spelling errors" (Bani, 2013).

Spreadsheet packages are valuable for Calculation. They allow numeric information such as forecasts, budget and regression analysis to be manipulated according to in-built or user defined formula. Gozie (2009) stated that: spreadsheets have become a primary tool for modern business. He further stated that: Spreadsheets are used to calculate sales projections, estimate the optimum numbers of products to manufacture. Example is Microsoft Excel. A view as expressed by Okwuduba, Offiah and Madichie (2018) posited that simulation package enhances teaching and learning by providing real opportunity for individualized instruction, accelerating, enriching and deepening skills as well as engaging students actively in learning. The computer assisted learning both within the setting of developed and developing countries has shown positive effect of the use of

computers to promote students' achievement as corroborated by Jongur, Mohammed & Abba (2008). In the enquiry/discovery and laboratory method of teaching science mostly computer make students to be scientifically oriented and thus making them to possess the ability of rational thinking and problem solving. This will eventually lead to be a better use of computer by students. These students are the teachers target audience to whom he/she wants the message to go to. For the students to get the message correctly, they must be attentive and must have the capacity to understand the message i.e. the message must be learnt. Young, Klemz, and Murphy (2003) also found that student learning outcomes improve when students prefer the learning activities. The general approach to understanding the effect of teaching on student learning revolves around teachers' competence, teaching method, learning environment, school infrastructure and students' performance (Karns, 2005).

Finally, students lose, interest in the learning and use of the computer because it is not made compulsory in the syllabus of any external-examination body most especially West African Examination Councils (WAEC) and National Examination Council (NECO). On the other hand, curriculum means the translating of the national policy of education into activities/experience that will promote students learning so that the goals and objectives in the national policy of education are achieved from the last definition, planned activities/experience of our national policy of education which are the goals & objectives that can be achieved. Some researchers have argued that there is no direct link between learning and the use of computer assisted instructions, the weight of evidence now clearly shows that indirectly, there can be a significant positive impact as effective instructional design can positively influence academic performance as ascertained by Alake (2020), Aladejana and Idowu (2009). Okwuduba, Offiah and Madichie (2018) had earlier recognized the use of computer simulation as an important feature of the educational process that makes learning more meaningful.

METHOD

Survey research design was used in this work (the questionnaire). This design is used because only a part of the population was studied and findings from this were generalized for the entire population. This study was carried out in secondary schools in Gombe metropolis of Gombe State. The Population of the study includes all secondary schools in Gombe metropolis. In Gombe metropolis, we have many secondary

schools which include public and private. Stratified random sampling technique was used in the study. In all, three public secondary schools with a population of 70 students and three private secondary schools of population 30 students were used. The schools used in the work are; GSSS Gombe, GDSSS Gombe, Amadu Gombe, Joy Academy, Alheri Academy and Kanady Academy.

The questionnaire given to the students was geared towards testing for some independence variables like the students attitude towards computer and their laboratory facilities and also the school environments.

The perceptions of the respondents were rated as follows:

Very large extent	(VLE) – 5
Large extent	(LE) – 4
Moderate extent	(ME) – 3
Small extent	(SE) – 2
Very small extent	(VSE) – 1

Questionnaire was administered by hand to the respondents. The researcher helped in correcting misinterpretation. The answered questionnaire was collected on the spot from the respondents by the researcher, making sure that all the respondents submitted.

The data collected was analysed according to the research questions using the mean.

DECISION RULES - the mean $x = \frac{\sum fx}{\sum x}$ is used to arrive at the decision of the research work. Also the mean scale of **0.0 to 1.5 means that the item is at "very small extent", 1.5 to 2.5 means that the item is at "small extent", 2.5 to 3.5 means that the item is at "medium extent", 3.5 to 4.5 means that the item is at "large extent" and 4.5 to 5.0 mean that the item is at "very large extent".**

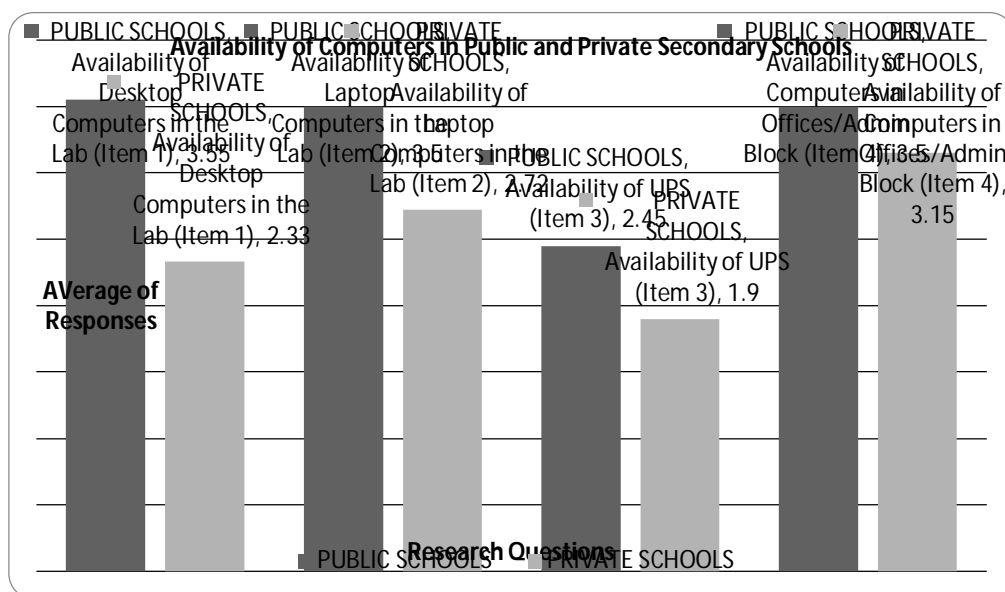
DATA PRESENTATION/ANALYSIS AND RESULT DISCUSSIONS

Following the DECISION RULE above, the mean $x = \frac{\sum fx}{\sum x}$ is used to arrive at the decision of the research work.

Research Question One (1): To what extent are computers available in Public and Private secondary schools?

Table 1.0: Availability of computers in public and private secondary schools

S/N	ITEM	SCH. TYPE		VLE (5)	LE (4)	ME (3)	SE (2)	VSE (1)	TOTAL	DEC/MEAN $x = \frac{\sum fx}{\sum x}$
1	To what extent are Desktop computers available in your School computer Laboratory?	PUB	x fx	20 100	40 160	20 60	15 30	5 5	$\sum x$ 100	3.55
		PRI.	x fx	5 25	7 28	25 75	40 80	25 25	$\sum x$ 100	2.33
2	To what extent are Laptop computers available in your School computer Laboratory?	PUB	x fx	25 100	45 180	15 45	10 20	5 5	$\sum x$ 100	3.5
		PRI.	x fx	7 35	3 12	55 165	25 50	10 10	$\sum x$ 100	2.72
3	To what extent are Uninterrupted Power Supply (UPS) available in your school?	PUB	x fx	- -	- -	55 165	35 70	10 10	$\sum x$ 100	2.45
		PRI.	x fx	- -	- -	10 30	60 120	40 40	$\sum x$ 100	1.9
4	To what extent are computers available in Admin Block/ Offices?	PUB	x fx	10 50	30 120	60 180	- -	- -	$\sum x$ 100	3.5
		PRI.	x fx	10 50	35 140	35 105	20 20	- -	$\sum x$ 100	3.15



The above chart reveals that more Desktop computers are available in the public secondary schools than in the private secondary schools. Since item 1 have its means score as 3.55 for public school and 2.33 for private secondary school which is at a large extent. Item 2 have its means score as 3.5 for public school and 2.72 for private secondary school. This means that there are more laptop computers in public school than in private school.

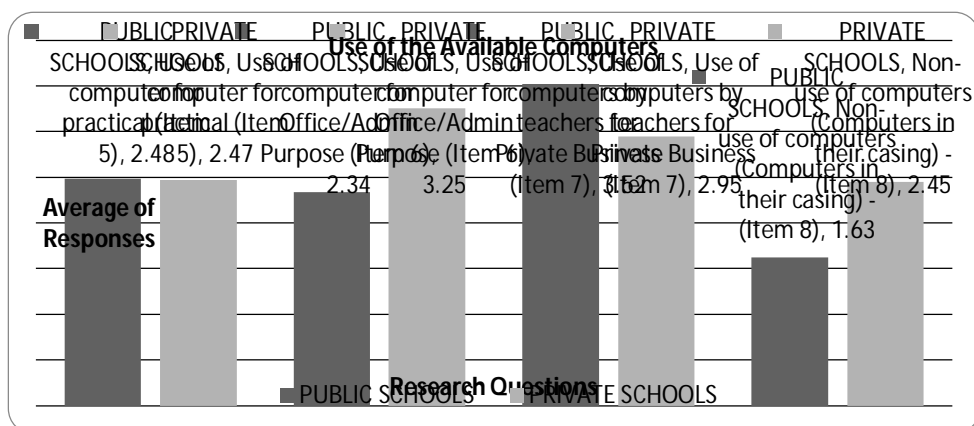
Item 5 reveals that the usage of uninterrupted power supply (UPS) is at small extent, since both the public secondary school and the private secondary school has their mean score at 2.45 and 1.9 respectively. Also item 4 shows that both the public secondary school ant the private secondary have computers at medium extent in their administrative block/ offices since their mean score is in the range of 2.5 to 3.5.

Research Question Two (2): What are the computers used for in these schools?

Table 2.0: Uses of the available computer

ITEM	SCH TYPE	VLE (5)	LE (4)	ME (3)	SE (2)	VSE (1)	TOTAL		DEC/MEAN $x = \frac{\sum fx}{\sum x}$
							$\sum x$	$\sum fx$	
5	PUB	x	12	15	20	15	38	100	2.48
		fx	60	60	60	30	38	248	
	PRI.	x	11	9	18	40	22	100	2.47
		fx	55	36	54	80	22	247	
6	PUB	x	13	18	14	30	25	100	2.34
		fx	65	72	42	30	25	234	
	PRI.	x	25	20	10	-	45	100	3.25
		fx	125	80	30	-	45	280	
7	PUB	x	7	43	45	5	-	100	3.52
		fx	35	172	135	10	-	352	
	PRI.	x	5	35	10	40	10	100	2.95
		fx	35	140	30	80	10	295	
8	PUB.	x	11	-	-	19	70	100	1.63
		fx	55	-	-	38	70	163	
	PRI.	x	20	-	-	65	15	100	2.45
		fx	100	-	-	130	15	245	

Table 2.0 – Uses of the available computers



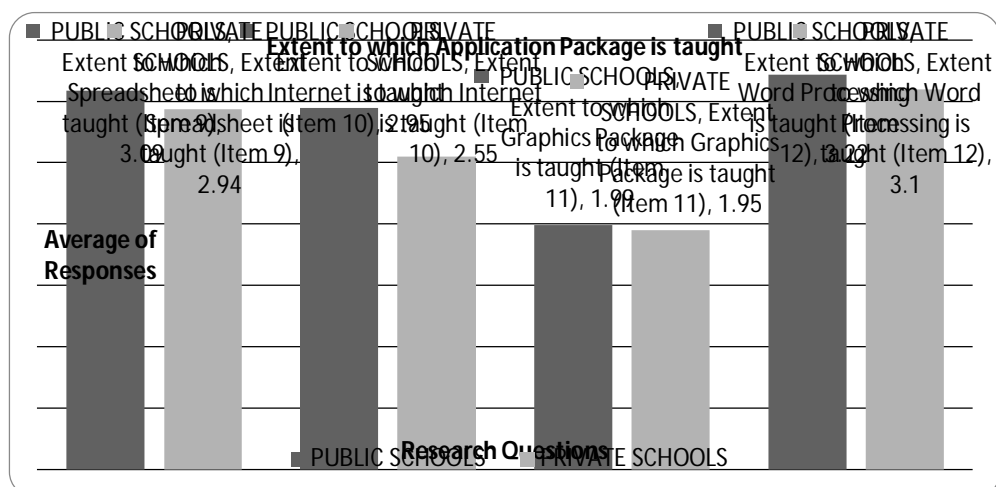
The above chart shows that computers are used in private schools mostly for office and administrative purpose, since item 6 have its means score as 3.25 which is at a very large extent. In item 7, it shows that in public secondary school that the computers are used for private business by the teachers, since the mean score is 3.52. It is used at a very large extent. In

item 5 & 8 in both public and private schools have their mean score at a very small extent because it is not up to 3.

Research Question Three (3): What kind of software packages and application programs are learned by students?

Table 3.0: kind of software package and application programme learned by students

ITEM	SCH TYPE	VLE (5)	LE (4)	ME (3)	SE (2)	VSE (1)	TOTAL		DEC/MEAN $\bar{x} = \frac{\sum fx}{\sum x}$	
							$\sum x$	$\sum fx$		
9	PUB	x	12	40	3	35	10	$\sum x$	100	3.09
		fx	60	160	9	70	10	$\sum fx$	309	
	PRI	x	14	33	5	29	19	$\sum x$	100	2.94
		fx	70	132	15	58	19	$\sum fx$	294	
10	PUB	x	20	25	20	-	35	$\sum x$	100	2.95
		fx	100	100	60	-	35	$\sum fx$	295	
	PRI	x	-	35	15	20	30	$\sum x$	100	2.55
		fx	-	140	45	40	30	$\sum fx$	255	
11	PUB	x	-	13	12	36	39	$\sum x$	100	1.99
		fx	-	52	36	72	39	$\sum fx$	199	
	PRI.	x	-	15	10	30	45	$\sum x$	100	1.95
		fx	-	60	30	60	45	$\sum fx$	195	
12	PUB.	x	13	25	40	15	7	$\sum x$	100	3.22
		fx	65	100	120	30	7	$\sum fx$	322	
	PRI.	x	15	32	2	50	1	$\sum x$	100	3.1
		fx	75	128	6	100	1	$\sum fx$	310	



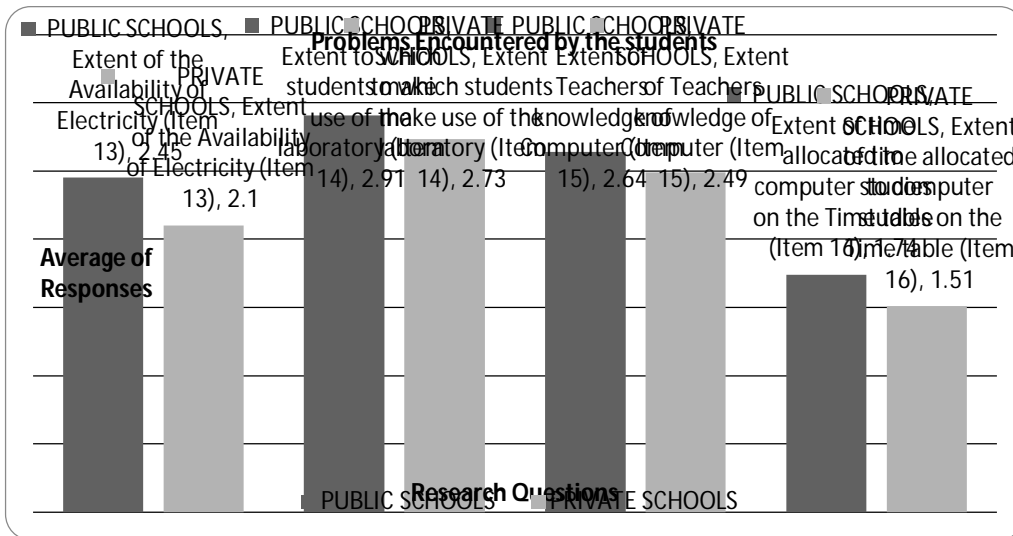
Item 9, in both public and private school their mean score are 3.09 and 2.94 respectively which reveals that the kind of spreadsheet package learnt by the students is large. In item 12 both in public and private school, the extent to which the students study word processor and windows is at a very large extent, since their mean score are 3.22 and 3.10 respectively. Also with item 10 and 11 having a mean score less than 3 respectively, the result shows that the kind of software learnt by the public & private secondary school is small.

Research Question Four (4): What problems are encountered by students in the study of computer as a subject?

Table 4.0: Problems encountered by the students

ITEM	SCH TYPE	VL E (5)	L E (4)	ME (3)	SE (2)	V S E (1)	TOTAL		DEC/ MEAN $x = \frac{\sum fx}{\sum x}$	
							$\sum x$	$\sum fx$		
13	PUB	x	-	15	35	30	20	$\sum x$	100	2.45
		fx	-	60	105	60	20	$\sum fx$	245	
	PRI.	x	-	-	30	50	20	$\sum x$	100	2.1
		fx	-	-	90	100	20	$\sum fx$	210	
14	PUB	x	-	15	51	34	10	$\sum x$	100	2.91
		fx	-	60	153	68	10	$\sum fx$	291	
	PRI.	x	-	16	50	25	9	$\sum x$	100	2.73
		fx	-	64	150	50	9	$\sum fx$	273	

15	The extent to which the teachers of your school have the knowledge of computer?	PUB	x	-	17	40	33	10	$\sum x$	100	2.64
			fx	-	68	120	66	10	$\sum fx$	264	
		PRI.	x	-	15	39	26	20	$\sum x$	100	2.49
			fx	-	60	117	52	20	$\sum fx$	249	
16	The extent to which time is given for computer studies in your schools time table is?	PUB	x	-	2	25	18	55	$\sum x$	100	1.74
			fx	-	8	75	36	55	$\sum fx$	174	
		PRI	x	-	1	9	30	60	$\sum x$	100	1.51
			fx	-	4	27	60	60	$\sum fx$	151	

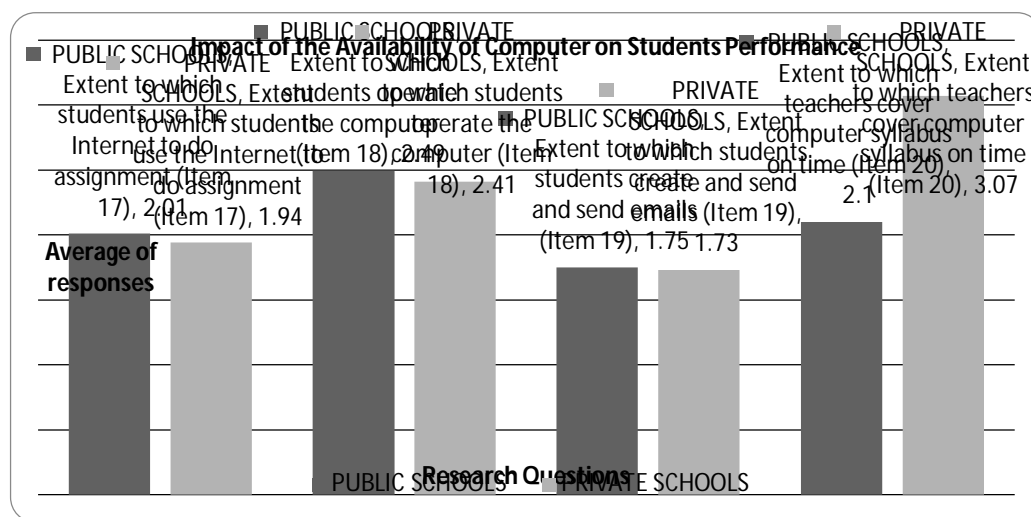


From the table above item 16 has 1.74 & 1.51 for public and private school, it means that the time given for computer studies is small. Also the extent to which the teachers have proper knowledge of computer studies is average in some of the public and private schools. It also showed that some teachers employed cannot bring out what is needed of them, some are not computer graduates, they only teach computer because of lack of computer teachers. The extent to which power supply is available is small because both public and private schools has the mean of less than 2.5. This will make the students less interested in practical work. The school cannot also bring out resource to support the power supply by providing generator. Item 14 have the mean of 2.91 and 2.73 respectively. This shows that the extent to which students makes use of the laboratory is not good enough.

Research question Five (5): What are the impacts of the availability of computer on students' performance?

Table 5.0: the impacts of the availability of computer on students' performance

	ITEM	SCH TYPE		VLE (5)	LE (4)	ME (3)	SE (2)	VSE (1)	TOTAL		DEC/MEAN $x = \frac{\sum fx}{\sum x}$
		PUB	PRI.						$\sum x$	$\sum fx$	
17	The extent to which the students of your school use the internet to solve their assignment?	PUB	x	-	2	30	35	33	$\sum x$	100	2.01
			fx	-	8	90	70	33	$\sum fx$	201	
		PRI.	x	1	2	22	40	35	$\sum x$	100	1.94
			fx	5	8	66	80	35	$\sum fx$	194	
18	The extent to which students of your school operates the Computer?	PUB	x	-	28	50	15	7	$\sum x$	100	2.49
			fx	-	112	100	30	7	$\sum fx$	249	
		PRI.	x	-	23	55	17	5	$\sum x$	100	2.41
			fx	-	92	110	34	5	$\sum fx$	241	
19	The extent to which students create and send emails?	PUB	x	-	-	25	25	50	$\sum x$	100	1.75
			fx	-	-	75	50	50	$\sum fx$	175	
		PRI.	x	-	-	23	26	51	$\sum x$	100	1.73
			fx	-	-	69	52	52	$\sum fx$	173	
20	The extent to which the teachers of your school cover their computer syllabus on time?	PUB	x	-	-	50	10	40	$\sum x$	100	2.1
			fx	-	-	150	20	40	$\sum fx$	210	
		PRI.	x	23	-	55	5	17	$\sum x$	100	3.07
			fx	115	-	165	10	17	$\sum fx$	307	



The extent to which the teachers cover the syllabus in public secondary school is small because the mean is 2.1 but in private school the extent to which the teachers cover the syllabus is large because its mean is 3.07. Item 17 of the same table shows that the extent to which the students of both public and private school use the internet to solve their assignment is poor

because of the mean is less than 3. The table also shows that item 18 & 19 have a mean score of 2.49 & 2.41 and 1.75 & 1.73 respectively, it has a small extent.

MAJOR FINDINGS OF THE STUDY

The major findings reveal that in public secondary schools, computers are available to a large extent since it has the mean of 3.55. While in private secondary schools, the mean is 2.33, the availability of computers is to a small extent. Computers are used for office and administrative purposes in private secondary schools. While in public secondary school computers are used by teachers for their private business. The kind of application package learn by student is spreadsheet & word processor in both private & public schools. The time allocated to computer studies in both public and private secondary schools is to a small extent because its mean is 1.74 & 1.51 respectively. The power failure is a major problem, in most cases there were no power supply or it is epileptic in some other situations. The extent to which both the public and private secondary school students operates the computer is at small extent because its mean is 2.49 and 2.41 respectively.

DISCUSSION OF THE FINDINGS

The findings of the study in research question one (To what extent are computers available in Public and Private secondary schools?) reveals that, most of the public secondary schools have computers. Hence the extent of availability is "large". While the private secondary schools, have their own to a "small extent". In research question two (What are the computers used for in these schools?), item 6 (An indication of the extent to which the available computers in your school are used for office/Administrative purpose) have its mean score in private schools as 3.25, "medium extent"; item 7 (The extent to which my teachers use the computer for private business is): in public school as 3.52 while in private as 2.95. This shows that computers in both public and private school are used mostly for private business and office/administrative purposes apart from learning. From table three, result from research question 3 (What kind of software packages and application programs are learned by students?) shows that item 9 (To what extent is spreadsheet taught in your school?) and 12 (The extent to which word processor is studies in your school is?) have their mean score as 3.09, 2.94 and 3.22, 3.1 respectively. This shows that application packages are learnt to a "medium extent". The input came from both public and private school. Also with item 10 (The extent to which the

internet is studied in your school is?) having 2.95 and 2.55, the result reveals that internet is learnt to a “small extent” in both school. Enough time was not given to computer studies in both category of school.

The extent to which the students encounter difficulties in computer topics is to a “large extent” in both public and private schools this is caused by many things like: the teachers, not all the computer teacher in the schools have the good knowledge of computer.

This discourages the students from having much interest in computers. The extent to which the student operates the computer system is poor and small. This may be because of lack of laboratory usage and also lack of power supply.

CONCLUSION

From the above indications/result, it may not be hasty to make the generalization that students in public schools use more computers more than students in private schools. Also, it has become clear at this stage that availability of computer is the more crucial factor that will determine the use of computer. Hence, non-availability of computer will lead to non-learning and government and individuals should help in the provisions

REFERENCES

- Adegboyega SM, Adeoluwa OV.(2020). Effects of animated cartoon based instructional strategy on senior secondary school students'. *Journal of Human Kinetics and Health Education*.3(1):108–121.
- Adomi, E. E. and Kpangban, E. (2010). Application of ICTs in Nigerian secondary schools. *Library Philosophy and Practice (e-journal)*. Retrieved from <https://digitalcommons.unl.edu/libphilprac/345>.
- Adigun, J.; Onihunwa, J., Irunokhai, E.; Sada, Y. and Adesina, O. (2015). Effect of gender on students' academic performance in computer studies in secondary schools in New Bussa, Borgu Local. *Journal of Education and Practice*,6(33),1-7.
- Aladejana FO and Idowu I (2009). Using a Computerized graphics package to achieve a technology- oriented classroom. *Policy Futures in Education*. 7(4):439 – 444.
- Aladejana FO. (2008) Blended learning and improved science teaching in Nigeria primary schools. *Conference Proceedings, 3rd International*

Conference on ICT for Development, Education and Training, Accra, Ghana, eLearning Africa. Berlin, Germany, ICWE, GmbH. Page 255-258.

Aladejana F.O. and Ehindero, O.J and Aladejana, F.O. (2006). Introduction to the teaching profession. Institute of Education Publication, Lagos, Literamed Publication Nigeria Ltd. Page; 12–19.

Alake EM.(2020) Effects of computer simulation package on science students' attitude in some science concepts. Ikere Journal of Science (IKJOSC). page;1(1):107-116.

Alake EM. (2020) Enriching integrated science education through ICT: Implication for the teacher. Journal of Women in Colleges of Education. Page;11(2):108-109.

Bani A.O (2013). The Impact of Using the Word Processor to Develop EFL Learners' Writing Skill at Al-Imam Mohammad Ibin Saud Islamic University. Islamic University Journal of Human Research 21(2):1-26.

Gozie ,I. (2009). Fundamentals of Computer Technology. Enugu, Nero Generatio Ventures Limited.

Johnson, A.D. (2016). The Relationship between Student Perceptions of School Effectiveness and Student Achievement: Implications for Educational Planning. *Journal of Educational Planning*,23 {2}, 31-43

Jongor I.U, Mohammed A, and Abba AH.(2008) Learning strategies in teaching science through information and communication technology (ICT). Journal of Science Teachers Association of Nigeria. 2008;43(1-2):53-61.

Karns, G. L. (2005). An update of marketing student perceptions of learning activities: Structure, preferences and effectiveness. *Journal of Higher Education*, 27(2), 163-171.

Ogwo, E., Maidoh, N. E., and Onwe, C. E. (2015). Computer studies and its impact in secondary schools in umuahia-north local government

area of Abia State, Nigeria *I. J. Modern Education and Computer Science*, 6, 16-23.

Okwuduba EN, Offiah FC and Madichie CJ.(2018) Effect of computer simulations on senior secondary students' achievement I chemistry in Anambra State. *Asian Journal of Education and Training*. 4(4):284-289.

Olalekan Olagunju (2014). Promoting science and technology education in Nigeria.

Oloruntegbe KO and Alake E.M.(2010), Chemistry for today and the future: Sustainability through virile problem-based chemistry curriculum. *Australian Journal of Basic and Applied Science (AJBAS)*. 4(5):800-807.

Parker, P. (2006). MIS Major Enrollment Continues to Decline. *The Red and Black*. [Online]. Available: <http://www.redandblack.com> Accessed.

Patacsil, F.F and Tablatin C. L.S (2017). Exploring the Importance of Soft and Hard Skills as Perceived by IT Internship Students and Industry: A Gap Analysis. *Journal of Technology and Science Education*, 7{3}, 347-368

Stutern (2016). *The Nigerian Graduate Report*. Available at <https://medium.com/stutern-stories/stutern-releases-first-nigerian-graduate-report-9e510559a4e5> Accessed on November 16, 2019.

Yilji C.D and Wadaki J/R.Y (2008). Assessment of Science Teachers and the availability/Effective use of ICT Facilities. *Journal of Women in Colleges of Education (JOWICE)*. 11(2):55-60.

Young, M.R., Klemz B.R. and Murphy, J.W. (2003) Enhancing Learning Outcomes: The Effects of Instructional Technology, Learning Styles, Instructional Methods, and Student Behavior. *Journal of Marketing Education* <https://doi.org/10.1177/0273475303254004>