



## Evaluation of Availability and Use of Computer Systems and Accessories for Efficient Computer Instruction and Learning in Senior Secondary School

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### ABSTRACT

This research is an evaluation of the availability and use of Computer Systems and Accessories for Efficient Computer Instruction and Learning in Senior Secondary school. The main objective of this research is to investigate on the availability of computer laboratories in the secondary school and the ways in which the students are carrying out practical's with the computer system. Secondary and primary data were used in sourcing of data. Sample size was drawn from the total population. Tabulation and simple percentage was used in analyzing the data and chi-square statistical tool was adopted for its hypothesis. The findings indicated that the availability of computer system and accessories has significant impact on the efficient instruction and acquisition of computer skills in senior secondary school. It is recommended that senior secondary school equip their computer laboratories with the necessary computer accessories that will enhance effective learning and teaching of computer.

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## INTRODUCTION

One of the most significant and frequently discussed topics in modern education policy is the use of technology in teaching and learning (Rosen and Well, 1995; and Thierer, 2000). The majority of education professionals concurred that information and communication technology, when utilized appropriately, has enormous potential to enhance instruction and learning while also influencing career prospects. According to Poole (1996), computer illiteracy is currently thought of as the new form of illiteracy. This has really sparked a renewed and intense desire to provide schools with the computer facilities and trained staff needed to develop pupils who are skilled in technology and study well. Numerous research studies have reported beneficial effects of technology-assisted instruction (Burnett, 1994; Fitzgerald and Warner, 1996).

Internet availability has surely impacted teaching, learning, and research in the field of secondary education (Yusuf, 2005). Education is an essential human endeavour, involving principles and behaviour. The educational process can be strengthened, complemented, and improved by the collection of technologies collectively referred to as the internet (Simond, 2008). It will shift the centre of attention in education from the establishment to the learner. The instructor and the student are no longer the only things that the internet may befriend and live beyond. African proverb states that "raising a child requires an entire village."

Computer studies is effective if accompanied with practical, and this practical will definitely be validated with the availability of computers and computer accessories, computers and computer accessories are brilliant aids in teaching of computer. The availability of computer systems and their accessories is the subject of the study. A computer system is a programmable device that can react in a defined way to a given set of instructions (Aneke, L.C. 2005). It can carry out a program, which is a prerecorded list of instructions. Similar to any other human endeavour, computers now play an unprecedented role in education. Computers are being used in schools today for a variety of purposes related to teaching and learning. These days, a computer can lead a student through an education course at a video display unit in a way that will make the material easier to understand. The procedure aids in expediting the student departure process. This method, in contrast to using a human teacher, provides the chance to review any topic as many times as necessary to ensure it is understood. We refer to this method of instruction as computer-assisted learning (CAL). A computer can also instruct students by asking them questions (usually multiple-choice questions), marking their answers, grading their work, and automatically deciding whether to ask them to go to the next level of study or to repeat the just finished section of the lecture based on their performance. We refer to this method of instruction as computer-aided instruction (CAL). Computers have a significant impact on the availability of educational materials in addition to instructional programs. With the use of virtual library resources, computers convert school libraries into new

information service centres. All it takes to access the information is a few keystrokes on a computer keyboard or a mouse click of the gadgets that are beneficial and useful for a computer's operation, such as a keyboard, printer, scanner, mouse, display, etc. The primary goal of these investigations is to determine how much these items are visible in the tab. The lack of computer accessories is a concern for Nigerian students, since it prevents them from using the system much because the PC does not have the accessories installed. In order to maintain the decision to introduce computer studies in secondary schools that was made during the 32nd ministerial council meeting of the National Council of Education in 1987. To the extent that installing accessories will improve the seamless operation of programs for the benefit of students' learning, these accessories must be offered.

Though it has been rightly said that what is wrong with education cannot be fixed with technology. There is no doubt that modern life is dominated by technology. There is universal recognition of the need to use information and communication technology (ICT) in education as we enter the era of globalization where the free flow of information via satellite and the internet hold away in global information dissemination of knowledge. Already, Nigeria is on the wrong side of the international digital divide, as it has not made significant effort to integrate ICT into secondary school curriculum. A great deal of instructional and administrative work in secondary school in Nigeria is still carried out manually.

Due to lack of incorporating computer labs and related equipment, computer instruction and learning in secondary schools have become a very difficult issue. Theories without necessary practical help have never helped in enhancing the teaching and learning of computer. Most government secondary schools lack computers and computer accessories as a result of government lack of support. Irregular power supply and lack of interest by the students in learning computer militate against the teaching of computer in most secondary schools. Most of the teachers who are supposed to teach these computers assisted instructions do not have the basic knowledge of computer, since one cannot teach another what he/she does not know. Thus, these lapses are highly detrimental to the teaching and learning of computer in secondary school.

#### **LITERATURE REVIEW**

H0: The availability of computer system and accessories has no significant impact on effective teaching and learning of computer in senior secondary school.

H1: The availability of computer and accessories has significant impact on the effective teaching and learning of computer in senior secondary schools.

The Nigerian Federal Government launched the Universal Basic Education (UBE) strategy in 1998, and as a result, computer education was incorporated into the 6-3-3-4 educational system with the following goals and objectives:

1. Generate personnel capable of receiving training in both hardware and software development.
2. Create computer engineers capable of fixing and maintaining malfunctioning parts.
3. Create specialists with computer proficiency in the fields of engineering, research, and pure and applied science.
4. Establish a scientific mindset and method of organizing, observing, and problem-solving through experiences.
5. Acquiring values for lifelong learning and practical living, as well as literacy and numeracy abilities.
6. Gain an understanding of the value of computers for the future as well as their contributions to society and humanity.

Information and communication technology (ICT) is constantly shaping or controlling the world we live in today, drastically altering both our environment and culture. ICT, according to Ajay and Sripathi (2014), includes social sciences, technology, and science on a single integrated platform that in turn organizes and tracks all research and development efforts or informs society of current trends. One of the main parts of ICT is the computer. It is a tool that, by influencing how people socialize, study, shop, conduct business, communicate, and connect for multiple mutually beneficial reasons, has independently and profoundly continued to alter people's and corporate entities' behavioural patterns.

The benefits of computer studies to students in senior secondary school. To meet up these changing needs of the society, computer is beneficial to the student by:

1. Given the right condition, computer is beneficial to students in promoting, encouraging and facilitate students to have access to information independently if it is used properly.
2. It also assists students with special needs to be able to realize and achieve their goals by working at their own rate.
3. Creating greater interest and enthusiasm for learning among the students.
4. Using computer devices in accessing relevant information from the internet.
5. Allowing the learners to have exposure to varieties of vocational and work skills.
6. Promoting student with profound multiple learning disabilities to be able to communicate easily.
7. Using voice communication to gain self-confidence and able to mix socially in schools and their communities.
8. Having the potential to significantly increase access to guidance service, freeing it from constraints of time and space (Oye, et al 2012)
9. Giving the students more resources so they can manage resource-based learning with ease.

The following are some advantages of ICT for students:

1. Students' ability to access instruction independently can be enhanced by computers.
2. Students who require special education can complete assignments on their own.
3. Encourage pupils to be more enthusiastic about their studies.
4. Students with visual impairments can access material on the internet with their peers who are sighted.
5. Give kids more exposure to workforce and vocational skills.
6. There is an increased ease of communication among students with severe and multiple learning disabilities.
7. At school and in their communities, students who use voice communication aids acquire social credibility and confidence.
8. Students who feel more comfortable using ICT at home are more inclined to use it for both academic and recreational purposes.
9. Make online educational resources available to remote learners around the nation.
10. Offer more resources to students in order to resources base learning.

Because of this, the computer education curriculum for Nigeria's Basic Education Schools considers the convergence of technology, global trends, and the traits of the information age and knowledge-based ICT as the main drivers of economic progress. variables that determine how well computer studies are implemented in senior secondary education.

## **METHODOLOGY**

Despite computer education's significance for the advancement of the country, there is still a need for it and a desire for it due to its many obstacles. The following elements are to blame for this regrettable aspect of the nine-year basic education program's ineffective implementation of computer studies:

1. Inadequate or non-existent computer labs: The majority of schools are devoid of computer labs. Where it is there, their equipment is inadequate. Students need to be able to put what they have learned in the classroom into practice in order to study computers effectively. Students that struggle to understand what they read in textbooks or in class will be able to learn more in the lab since they will be able to practice and see the material. The teaching and learning resources needed to make technological innovation possible should be readily accessible, according to Odera (2011). All schools must have a sufficient supply of computers and other relevant resources in order to incorporate computers into the curriculum. Changes that are necessary cannot be implemented without the necessary hardware and software such assistance and other educational resources.
2. Inadequate textbooks in the classrooms: The majority of schools lack textbooks, and those that do have them lack a comfortable space, like a library, where children can read privately.

3. Lack of motivation: Students need to be motivated in order to be interested in computers. It is the role of the instructor to pique students' interest in computers. These interests may be situational or private.
4. A poor school atmosphere: In a suitable environment, learning can be supplied effectively and efficiently. Students' learning is enhanced when they are in a favourable learning and teaching environment. In most of our public schools, the atmosphere is poor. While some urban students benefit from excellent learning environments, others do not. Some pupils attend class outside under trees in rural locations since the classrooms are either unusable or in poor condition.
5. Lack of facilities and educational materials: Kurawa (2008): hypothesized that because most schools are ill-equipped, science teachers face significant challenges due to a lack of material resources. Under such circumstances, instruction hinders students' acquisition of knowledge and reduces their skill development. Utilizing technology in the classroom will not only save time and pique students' interest, but it will also help students retain more of what they learn because most people remember things they see, hear, and read for longer than they remember things they read alone.
6. Inadequate or non-existent electricity supply: It has been noted that while many schools lack an electricity supply, others do. Due to a shortage of electricity, schools in rural locations typically do not profit from the inclusion of computer studies in the curriculum. The use of computers in the majority of schools, assuming they are even available, has recently been significantly impacted by the constant power outages.
7. Unqualified teachers: An effective computer education is greatly influenced by the calibre of the professors. Regretfully, most schools have access to safe, competent teachers. A computer teacher often teaches the entire school at most schools where computers are included in the curriculum.
8. Lack of incentive to encourage teachers: Teachers pursuing computer courses are not adequately compensated, nor are there any incentives available. Since teachers are the most essential component of the course, the research of computer education in Nigeria has been hampered by their poor pay.
9. Lack of dedication on the part of school managers: The introduction of computer education calls for committed leaders. To guarantee that the goals and objectives of the policy are met, it needs a person who is well-versed in the philosophy underlying it to provide direction. In certain educational institutions, the headmaster, who is meant to serve as the intermediary between educators and the government, fails to convey or convey the requirements to the relevant authorities on time or at all.
10. Curriculum content: The syllabus and curriculum need to be modified to improve effective teaching and learning because the material is too wide and complex for the students at this level. However, the population of students, particularly in public schools, makes the teaching staff

insufficient. A curriculum needs to be a set of rules that incorporates meaningful experiences that are supplied and guided by educational institutions in order to accomplish pre-established objectives.

11. Low standard of living: The majority of people are interested in learning new computer skills and knowledge. Their interest lies in applying and using computers to improve their quality of life. Due to their extremely low degree of knowledge acquisition and computer system purchase, those with less privilege who were unable to receive a traditional education were unable to afford the means of obtaining a computer education.
12. Inadequate funding: The importance of computers in everyday life cannot be overstated. The operation and appropriate learning of computer education have been significantly impacted by the government's (federal and state) inadequate funding of the education sector. Proper learning, practical application, and good course instruction are all dependent on funding.
13. Ineffective application of policies: Lately, there have been concerning policies concerning education. The efficient and successful teaching and learning of computer education has been hampered or tarnished by the inadequate or non-existent use of these policies. The correct implementation of computer education has been hampered by bureaucratic bottlenecks, delays in implementing policies, and non-application of policies.
14. Administrators' Attitudes: The majority of computer technology adoption in schools is the result of individual teacher effort. Implementing computers in classrooms is significantly hampered by administrators' lack of support. Computer adoption cannot be successful unless administrators provide teachers with leadership and assistance.

The impact of the availability and use of computer system and accessories for effective teaching and learning of computer in senior secondary school.

It is quite obvious that theory without practical is difficult. To this effect, the availability and use of computer system and accessories is important for effective teaching and learning of computer in the senior secondary school in the following ways.

1. Student's familiarity with the computer system: The more familiar the student is with the computer system the more active the students become with its usage. When the necessary computer accessories is in the school environment the students will be able to identify some of the computer components and their functions.
2. Creates room for practical: Most at times things are best understood when they are put to practice. Computer knowledge can only be effective when it is practiced. Theories is never enough for students to learn and know computer. For an effective teaching and learning of computer in

senior secondary schools, the school must have a good computer laboratory that will enhance practice which will make perfect.

3. Identification of the various components of the computer system: During theoretical analysis of the computer parts and components such as the hardware and the software, the student tends to understand but when these different components, are presented to them physical, it will drive home the message. Thus, the availability of computer system and accessories is a necessity for the accomplishment of greater knowledge of computer.
4. Effective learning of maintenance procedure: When students are presented with the different components of the computer, they will be cautioned on how to handle them to avoid damage, thereby creating awareness of the fragility of computer system and accessories.

Availability of vision and plan about the contribution of ICT to learning and teaching of computer studies in secondary school

Instructors must understand precisely how ICT is used as a tool for instruction and learning. Several studies have shown that successful ICT integration in schools depends on the school's ICT vision. The next stage is to develop an ICT integration plan that outlines how teachers are expected to include technology into their lessons when the vision has been successfully developed and approved (Strudler & Wetzelm 199). Effective ICT integration is actually ensured by an ICT master plan that is developed in accordance with a school's vision and sociocultural context (Bangkok, 2004). In order to demonstrate the technology planning process in a private K-12 school in Turkey, Gulbahar (2005) carried out a study. A total of 376 pupils, 25 administrative employees, and 105 teachers provided data for the study. The study's conclusions showed that in order to employ technology for teaching, learning, and administrative reasons effectively and efficiently, educational institutions need to create a technology plan. The development of ICT-related skills in staff and students, curriculum and assessment, ICT facilities and resources, and support teams (technical, administrative, and pedagogical) are other concerns that should be taken into account. As a result, an ICT integration plan offers a thorough road map of the actions and techniques required to realize the ICT vision for the school. Although creating ICT integration plans is undoubtedly difficult and time-consuming, the effort is typically well worth it.

## RESULT AND DISCUSSION

### 1. Accessibility of the ICT Infrastructure at Each Level

Utilizing resources with the most recent hardware and software is essential to the spread of technology. Most schools now have a variety of electronic resources and technological infrastructure that was installed in recent years. For example, an Australian school has stated that all staff members and students in year 5 and up have access to personal notebook computers, as well as their own online area, email account, and workspace.

The school has set up its own internet and put all of its resources online. It also offers video conferencing. These can be accessed from home and school via radio hookups. The employment of radio in this college is viewed as an invention that has fundamentally altered the way that instruction is given and received. In this school, a lot of teachers used technology to enhance their instruction. When they saw the promise of online learning and the ability to create shared, web-based teaching resources, this understanding emerged. For ICT to be integrated into education, hardware, software, and internet infrastructure must be available. Sufficient funding and adaptable, forward-thinking planning that is closely aligned with what educators genuinely desire and require at any particular point in time will be crucial.

## 2. Analysis

A total of 350 questionnaires were sent out to respondents and 300 questionnaires were filled and returned. The table below shows the data from the respondent.

Table 1. Academic Qualification

Range	No. of respondents	Percentage %
SSI	60	20
SS II	90	30
SS III	120	40
Teachers	30	10
Total	300	100

The table above shows that 20% of the respondent's academic qualification are SSI, 30% of the respondents fall within SSII, and 120 respondents with 40% have SSII, while 10% of the respondents are teachers in the selected secondary schools.

Presentation and analysis of data according to research questions

Question 1: What are the methods used by the computer teachers in teaching computer science?

Table 2. Disagreed on the Use of Lecture Method

S/NO	ITEM	A	D
1	Lecture method	10%	90%
2	Demonstration	60%	40%
3	Use of example	70%	30%
4	discussion	10%	90%

The table above show that 90% disagreed on the use of lecture method in teaching computer science, while 10% agree, 60% of the respondents agreed on the use of demonstration in teaching computer science while 40% disagreed, 70% of the respondents agreed in use of example while 30% disagreed, 90% disagreed in discussion method while 10% agreed.

Question 2: To what extent are the learners exposed to computer practical work?

Table 3. Learners Exposed to Computer Practical Work

S/NO	ITEM	A	D
1	Students are often exposed to computers and accessories	10%	90%
2	Students have up to 5 hours practical work weekly	60%	40%
3	There are up to ten computers in the school laboratory	70%	30%
4	Students are not allowed to touch computer	10%	90%

Source: Field survey 2021

The table shows that 60% of the respondents agreed that students are often exposed to computers and accessories while 40% of the respondents disagree. 30% of the respondent agree that students have up to 5 hours practical work weekly while 70% disagree, 60% of the respondents agree that there are up to ten computers in the school laboratory while 40% disagree, 70% of the

respondents agree that students are not allowed to touch computer while 30% disagree.

Question 3: To what extent are computer system and accessories be maintained?

Table 4. Computer System and Accessories be Maintained

S/NO	ITEM	A	D
1	Computer engineers visit the laboratory often	40%	60%
2	Computer accessories are often	30%	70%
3	The computer accessories in the laboratory are very old or obsolete	30%	70%
4	Student clean the computers themselves	70%	30%

Source: Field Survey

The table above shows that 40% of the respondents agree that computer engineers visit the laboratory often while 60% disagree, 30% of the respondents agree that computer accessories are often replaced, while 70% disagree, 30% of the respondents agree that the computer accessories in the laboratory are very old or obsolete while 70% disagree. 70% of the respondents agree that student clean the computers themselves while 30% disagree.

### Test of the Theory

I have the Null (Ho) alternative (HI) hypothesis to test the hypothesis that was previously formulated during this investigation. The hypothesis is tested using chi-square methods.

### Hypothesis One

Ho: The availability of computer system and accessories has no significant impact on effective teaching and learning of computer in senior secondary school.

HI: The availability of computer system and accessories has a significant impact on effective teaching and learning of computer in senior secondary school.

Question 2: To what extent are the learners exposed to computer practical work?

Table 5. Learners Exposed to Computer Practical Work

S/NO	ITEM	A	D
1	Students are often exposed to computers and accessories	60%	40%
2	Students have up to 5 hours practical work weekly	30%	70%
3	There are up to ten computers in the school laboratory	60%	40%
4	Students are not allowed to touch computer	70%	30%

Source: Field Survey

Table 6. Observed Frequency

Variable	A	D	Total
Top mgt	90	60	150
Junior	48	12	60
Auxiliary staff	72	18	90
Total	210	90	300

Calculation of expected frequency, we use:

Rt = Row total

Ct = Column total

Gt = Grand total

Fe = Row total x column total

Grand total

$$SS1 \frac{150 \times 210}{300} = 105$$

$$SSI \text{ and } SSII \frac{60 \times 210}{300} = 42$$

$$\text{Teachers } \frac{90 \times 210}{300} = 63$$

No respondents

$$SSI \frac{150 \times 90}{300} = 45$$

$$\text{SSi and SSII } \frac{60 \times 90}{300} = 18$$

$$\text{Teachers } \frac{90 \times 90}{300} = 27$$

Table 7. Expected Frequency

Responses	Top Mgt	Junior	Axillary staff
Agree	105	42	63
Disagree	45	18	27

Chi-square formula

$$X^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where

$O_i$  = Observed frequency

$E_i$  = Expected frequency

= Summation

Table 8. Contingency Table for Calculating Chi-square ( $X^2$ )

$O_i$	$E_i$	$(O_i - E_i)$	$(O_i - E_i)^2$	$\frac{(O_i - E_i)}{E_i}$
90	105	-15	-30	-0.143
48	45	-3	-6	-0.067
72	42	-30	-60	-0.714
60	18	42	84	2.333
12	63	-51	-102	-0.809
18	27	-9	-18	-0.333
			Cal $X^2$	-0.267

### Decision Rule

We reject null hypothesis of independence at 0.05 level of significance, if the computer value of the tested statistics ( $X^2$ ) exceeds the critical value of 0.95 for  $(r - 1) (c - 1)$  degree of freedom. Based on the study the findings include the

following findings. That the introduction of computer systems, accessories and use can assist student in knowing about computer operation. That effective management and maintenance of the computer systems and accessories in the computer laboratory can help in ensuring the availability of the systems to the students during their practical.

That students can and do carry out academic research and computer services can research with the school computer laboratory. The availability of computer system and accessories are very important for effective teaching and learning of computer in senior secondary school as it avails the students the opportunity to carry out practical.

## **CONCLUSIONS AND RECOMMENDATIONS**

The findings conclude that to achieve effectiveness in teaching and learning of computer in senior secondary schools, there must be good computer laboratory that is equipped with the necessary computer equipment and accessories to facilitate computer practical and operation by the students. Teachers should be computer literate to be able to impact same on the students. Effective management and maintenance practices is necessary in achieving the availability of computer systems and accessories within the school computer laboratory.

These computers need to be able to run on electricity. Where the present National Electricity grid (PHCN) is insufficient or inaccessible, electricity generated by solar or batteries can be made available. There need to be a computer lab and related resources in every public school. Additionally, in order to expand students' understanding for research purposes and the acquisition of current information, internet facilities should be made available to professors and students in general. Provision of parts for maintaining and repairing the malfunctioning or broken computer.

The teaching of computers should be entrusted to certified educators with extensive training in computer education. Additionally, in cases when they are unavailable, it is advisable to support the present instructor using the computer in being retrained. Experts or organizations tasked with curriculum evaluation should review the syllabus or curriculum's material as needed; one such body is the Nigerian Education Research Development Council (NERDC). As a result, curriculum and syllabus should be continuously reviewed in accordance with information and communication technology changes, without bias.

Giving teachers incentives that would encourage them and improve their performance on the job will help them stay well-motivated. Teachers should get pay packages that are both reasonable and sufficient. Additionally, competent educators of computer students ought to be recognized, applauded, and financially supported so that they can attend additional seminars or workshops and advance their understanding of the latest developments and shifts in the world that impact the computer sector. To offer the students a clear understanding of what they are learning, the instructor should provide and employ instructional materials and equipment. Air conditioning is a necessary

component of a well-equipped computer lab or room, since it helps regulate temperature, dust, and other environmental hazards.

Individuals who possess the aptitude or want to develop computer skills ought to be motivated and supported, particularly the less privileged individuals who lack the financial resources. Any delays or bureaucratic bottlenecks should be eliminated, and the problem of government programs being implemented poorly should be investigated. Any delay that the officer or manager in charge causes should be considered a sabotage and should result in sanctions. It is important to create, strongly pursue, and implement policies that will support learning.

### **FURTHER STUDY**

This research still has limitations so further research on this topic is still needed "Evaluation of Availability and Use of Computer Systems and Accessories for Efficient Computer Instruction and Learning in Senior Secondary School".

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