

# USE OF COMPUTER TECHNOLOGY RESOURCES IN FACILITATING TEACHING AND LEARNING IN PRIVATE SENIOR SECONDARY SCHOOLS IN ABUJA MUNICIPAL AREA COUNCIL, NIGERIA

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## **Abstract**

This study examined the use of computer technology resources in facilitating teaching and learning in private senior secondary schools in Abuja Municipal Area Council (AMAC), Nigeria. The study adopted correlation research design. The sample of the study was made up of 12 out of 38 private senior secondary schools in AMAC, which was 32% of the population. A total number of 240 out of 613 teachers were randomly selected from the sampled schools. Simple random sampling technique was adopted for the study. The content validity of the instrument was used in this study. Furthermore, Computer Technology Resources, and Teaching and Learning Questionnaire (CTR TLQ) was pilot tested and reliability coefficient of .78 was obtained using Cronbach Alpha. frequency counts, percentage, mean and standard deviation were used to answer the research questions. Pearson product-moment correlation coefficient was used to test hypothesis. The study revealed that there was a significant relationship between teachers' computer technology resources utilization, and teaching and learning in private senior secondary schools in AMAC. This led the researcher to conclude that the use of computer technology resources facilitated teaching and learning in private senior secondary schools in AMAC. It was recommended that the management of private senior secondary schools should encourage the use of computer technology resources by providing enough of these resources, and ensure that they are used properly by the teachers to enhance teaching and learning.

**Keywords:** Computer Technology Resources, Teachers, Teaching and Learning, and Private Senior Secondary Schools

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## **Introduction**

The use of computer technology resources in education has become vital in the teaching and learning process. The recent advancement in information technology innovations and computer usage is rapidly transforming work culture, and teachers cannot escape the fact that today's teaching must provide technology-supported learning (Bhalla, 2013). Generally, computers have the potential to enhance teaching and learning process. It could also provide students with a learning experience that other strategies cannot provide (Wellington, 2005). Therefore, being prepared to adopt and use technology and knowing how it can support students' learning must become integral skills in every teacher's professional repertoire (Bhalla, 2013).

Dawson (2008), while examining the extent to which science teachers perceived that their pre-service education prepared them to use ICT in their teaching role, found that the most frequent uses of ICT were word processing, internet research, email and power point, while the least frequent uses were palm top computers, web page design, online discussion groups, and virtual excursions. For many years, teachers have worked with limited resources to facilitate teaching and learning. However, with the proliferation and widespread of computer technology utilization in teaching and learning, many restrictions and hindrances of the past can now be removed. As students and teachers gain access to higher bandwidths, more direct forms of communication and access to sharable resources, the capability to support these quality learning settings will continue to grow (Oliver, 2000).

The teachers in private senior secondary schools in AMAC, Federal Capital Territory (FCT), Nigeria need to be well informed in computer technology resources utilization for effective management of schools. This is necessary in the area of teaching and learning, which could be done through effective use of computer technology resources in the classroom. Therefore, the study examined the use of computer technology resources in facilitating teaching and learning in private senior secondary schools in Abuja Municipal Area Council, Nigeria.

## **Statement of the Problem**

The role of computer technology resources in facilitating teaching and learning in private senior secondary schools in AMAC cannot be overemphasized. Despite the significant influence of computer technology in the educational sectors in the world, Nigeria is yet to effectively incorporate the use of computer technology into the educational system. Furthermore, In AMAC, most senior secondary school teachers barely use computer technology resources in facilitating teaching and learning activities. This is because few teachers have broad expertise in using computer technology resources in their teaching. Also, very few of the teachers typically have a comprehensive knowledge of the wide range of computer technology resources while few of them are confident in using a wide range of these resources, and limited confidence affect the way lesson is conducted. Many teachers still fear the use of computer technology resources and thus, they are reluctant to use these resources in their teaching.

Moreover, the role of teachers is crucial in achieving effective teaching and learning in private senior secondary schools in AMAC. Computer technologies are seen as important resources to enable and support the move from traditional "teacher centre" teaching styles to more "learner centre" methods. Therefore, this study examined the use of computer technology resources in facilitating teaching and learning in private senior secondary schools in Abuja Municipal Area Council, Nigeria.

## **Purpose of the Study**

Specifically, the study sought to achieve the following objectives:

1. Identify the availability of computer technology resources in private senior secondary school in AMAC.
2. Establish the levels of teachers' computer technology resources utilization in private senior secondary schools in AMAC.
3. Establish the level of teaching and learning with computer technology resources in private senior secondary schools in AMAC.
4. Ascertain if there is any significant relationship between teachers' computer technology resources utilization, and teaching and learning in private senior secondary school in AMAC.

## **Research Questions**

In specific terms, attempt was made by this study to provide answer to the following research questions:

- i. Which of the computer technology resources are available in private senior secondary school in AMAC?
- ii. What is the level of teachers' computer technology resources utilization in private senior secondary schools in AMAC?
- iii. What is the level of teaching and learning with computer technology resources in private senior secondary schools in AMAC?

## **Hypothesis**

The following null hypothesis was formulated to guide the study:

H<sub>01</sub>: There is no significant relationship between teachers' computer technology resources utilization, and teaching and learning in private senior secondary schools in AMAC.

## **Conceptual Framework**

The computer technology use is a way in which teachers work with computers in the instruction of their students. A conceptual framework for using computer technology resources in facilitating teaching and learning by Bhalla (2013) is presented in this study. According to Bhalla, application of computer for instruction is known as Computer-Based Instruction (CBI) and that, CBI is an umbrella term for use of computers in both instruction and management of teaching and learning process, which includes CAL (computer-aided learning), CMI (computer-managed instruction), and CAI (computer-assisted instruction).

### **1. Computer-Aided-Learning (CAL)**

CAL describes an educational environment where a computer is treated as an aid to an overall teaching-learning strategy with other methods and aids such as lectures, demonstrations, projects, textbooks, supplementary books, worksheets, etc. It is used to complement regular teaching. Here, the computer becomes a tool - just like a chalkboard, a calculator, a pen, a chart, a model, a flash card, or a book - that helps teachers teach and helps their students learn. Teachers are resourced with multimedia (CDs or internet) content to explain topics better and make the teaching-learning process joyful, interesting, and easy to understand. The computer motivates and caters for different learning abilities. The internet provides far more up-to-date information than text books. Therefore, this mode of instruction employs use of computer in mainly three ways - Whole Class Instruction; Teacher-Directed Student Assignments; Teacher's Self Learning.

## **2. Computer-Managed-Instruction (CMI)**

Computers are tools that can be used not only to assist teachers as they teach but also to help with classroom management. CMI is an instructional strategy whereby the computer is used to provide learning objectives, learning resources, record keeping, progress tracking, assessment of learner performance, prescribe and control individualized lessons. The student does not necessarily interact with the computer system. The learner may be on-line to take tests. In addition, the computer can diagnose the learning needs of students and prescribe optional sequences of instruction for them. However, software designed to function as grade book, spreadsheets, databases, question bank, analysis and so on are examples of CMI. This mode of instruction employs use of computer in management of adjunct functions/instruction-related tasks such as material generation, lesson plan preparation, schedule preparation, attendance monitoring, student's performance assessment, individualized education plans preparation, student reinforcement, communication.

## **3. Computer-Assisted-Instruction (CAI)**

The term CAI has been used for any program where the computer does the teaching directly. In addition, CAI has often been used relatively synonymously with various other terms such as computer-assisted learning and computer-based learning, computer-enhanced instruction. For the purposes of this study, CAI refers to mode of instruction in which a student directly interacts with a computer and learns through lessons programmed into the computer. Here, computer is used for instructional tasks. The role of the teacher is to provide guidance to students in using this teacher-independent, self-instructional material on a computer at school or at home. The CAI uses instructional software that may broadly be classified in one of the following: tutorial, drill-and-practice, simulation, instructional gaming, and problem solving.

### **The Need for Computer Technology Resources in Teaching and Learning**

Fajola (2001) asserts that the computer is diligent and consistent in its mode of operation, as it does not suffer from tiredness or lack of concentration like human beings. According to Bada, Adewole, and Olalekan, (2009), computer performs multi-functional roles in teaching and learning processes at all levels: At the primary and secondary levels of education students can explore and generate learning through computer programme while at the tertiary level, computer can be used to store the daily or weekly observation of experiments in science. It can be used to mix colour, separate colours, scan, draw, design various things and create charts, and graphs for instructional purposes (Ajibade, 2006).

According to Adekomi (2001), information can be stored in manual files in the computer magnetic disc and retrieved when needed. The computer can provide a convenient technique for designing and developing a course of instruction. It can equally provide dynamic interaction between students and instructional programme not possible with most media.

### **Challenges in the Use of Computer Technology in Private Senior Secondary Schools**

Some of the challenges of computer technology use according to Bada, Adewole, and Olalekan, (2009) are:

- a. The challenges of computer education are both educational and administrative. The prominent among the administrative problems is cost. Over the years, the cost of computer has been on the high side. This has been a deterrent to the adoption of computer for instructional purposes in most Nigerian secondary schools. Coupled with this is the exorbitant price of software; it follows the same pattern as that for the hardware. Where attempts are made to purchase computers for instructional purposes, the costs of installation, maintenance and replacement are unavoidable.
- b. Death of trained personnel militates against the use of computer for instruction. Experts with the technical know-how of computers are few except the computer dealers who are profit conscious.
- c. Another impediment to use of computer in the classroom could be attributed to the syndrome of resistance to change among the teachers. They view the use of computer for education as a means of displacing them from their cherished job rather than an instructional material to enrich teaching and learning. Also, they regard the use of computer as an increase in their tasks in the classroom without adequate compensation, hence the prayer for premature death for computer education.
- d. Closely related to resistance to change is the problem of poor technological development in Nigeria. Nigeria is a developing country where the rate of illiteracy and poverty is high among young and old. A large number of Nigerians are ignorant of the tremendous advantages of technology.
- e. Dearth of instructional facilities militates against computer education in schools. Facilities such as adequate air condition, appropriate computer environment and building are not provided. Furthermore, electricity which is the primary source of power supply to the computer is not stable. This causes damages to the computer system.

## **Methodology**

In this study, three research questions and one hypothesis were formulated. Correlation research design was adopted. This method was employed to elicit responses from a sample of teachers in private senior secondary schools in AMAC. The population of the study consisted of 38 registered private senior secondary schools and 613 teachers in AMAC. The sample of the study was made up of 12 private senior secondary schools in AMAC. Ferguson (cited in Ogunshola, 2015) suggested that 10% of institutions in a study would be appropriate. Thus, 32% of the population was used. Simple random sampling technique was adopted for the study. A total number of 240 teachers (20 teachers in each sampled school) were randomly selected from private senior secondary schools in AMAC as sample for the study.

Furthermore, a questionnaire was designed by the researcher to elicit information from the respondents. The questionnaire was tagged "Computer Technology Resources and Teaching and Learning Questionnaire (CTR TLQ)" It was administered to the teachers. The CTR TLQ comprised of three sections (A to C). In Section A, items 1-5 covered availability of computer technology resources, while Section B covers items 6-14, which were used to measure the computer technology resources utilization by teachers. Section C covered items 15-25 that were used to measure teaching and learning with computer technology resources. The inventory for the availability of computer technology resources was on 3 point scale of available/in use, available/not in use and not available. It was used to identify the available

computer technology resources. The respondents were also required to answer the items on a 4 points rating scale, ranging from 4 to 1 as follows: To very large extent is 4 points, moderately is 3 points, rarely is 2 points and never is 1 point while Strongly Agree is 4 points, Agree is 3 points, Disagree is 2 points and Strongly Disagree is 1 point.

The content validity of the instruments was used. The reliability coefficient of CTTLQ was 0.78 using Cronbach Alpha. Frequency counts and percentage were used to answer the research question one. Mean score and the standard deviation (SD) were used to answer research questions two and three of the study. Pearson product-moment correlation coefficient (r) was used to test the null hypothesis at 0.05 level of significance.

The decision rule for interpretation of the results of the data analysis is that a mean score of 2.50 and above was considered as positive response (moderately/agree), and less than 2.50 was considered as negative response (rarely/disagree). The calculated probability (p-value) that was greater than the significant level of 0.05 was considered accepted while the p-value that was less than the significant level of 0.05 was considered not accepted.

**Results**

**Research Question 1**

Which of the computer technology resources are available in private senior secondary schools in AMAC?

**Table 1:** Analysis of the Availability of Computer Technology Resources in Private Senior Secondary School in AMAC

S/No	Computer Technology Resources	Available/In Use	Available/Not in Use	Not Available
1.	Laptop Computers	136 (57%)	82 (34%)	22 (9%)
2.	Desktop Computers	146 (61%)	70 (29%)	24 (10%)
3.	Tablets	114 (48%)	90 (37%)	36 (15%)
4.	Smartphones	160 (67%)	52 (22%)	28 (11%)
5.	Internet Facilities	166 (69%)	62 (26%)	12 (5%)

Table1 shows that computer technology resources were available and used in most private senior secondary schools in AMAC. Some of these available computer technology resources were not in use in some schools while some of them were not available in some schools.

**Research Question 2**

What is the level of teachers’ computer technology resources utilization in private senior secondary schools in AMAC?

**Table 2:** Analysis of the Levels of Computer Technology Resource Utilization by the Teachers in Private Senior Secondary Schools in AMAC

<b>S/N</b>	<b>Utilization of Computer Technology by the Teachers</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Decision</b>
6.	I use laptop computer for teaching of my subject area.	3.22	1.00	Moderately
7.	I use laptop computer to browse, read and research for materials required for teaching and learning.	3.01	1.00	Moderately
8.	I use desktop computer as an instructional materials to enhance teaching and learning.	3.25	0.98	Moderately
9.	I use desktop computer to browse, read and research for materials required for teaching and learning.	3.07	0.96	Moderately
10.	I use tablet for teaching of my subject area.	2.82	1.01	Moderately
11.	I use tablet to browse, read and research for materials required for teaching and learning.	2.77	1.01	Moderately
12.	I use smartphone to call and send text messages to the staff and parents as regard to teaching and learning.	2.92	0.92	Moderately
13.	I use smartphone to browse, read and research for materials required for teaching and learning.	2.95	1.00	Moderately
<b>Overall Assessment</b>		<b>2.99</b>	<b>1.00</b>	<b>Moderately</b>

Table 3 shows that the overall assessment score for the level of teachers' computer technology resources utilization in private senior secondary in AMAC schools was 2.99, which is greater than the 2.50 cut-off point. This study means that the level of teachers' computer technology resources utilization in private senior secondary schools was moderate.

**Research Question 3**

What is the level of teaching and learning with computer technology resources in private senior secondary schools in AMAC?

**Table 3:** Analysis of the Level of Teaching and Learning with Computer Technology Resources in Private Senior Secondary Schools in AMAC

S/No	The Use of Computer Technology Resources in Teaching and Learning:	Mean	Standard Deviation	Decision
15.	Helps the students to learn more effectively	3.05	1.01	Agree
16.	Allows the students to be more creative and Imaginative.	3.03	1.02	Agree
17.	Encourages the students to communicate more with their classmates.	2.68	1.02	Agree
18.	Motivates the students to interact actively during the classroom activities.	3.17	1.00	Agree
19.	Helps to improve students' abilities especially in reading and writing.	3.12	1.01	Agree
20.	Helps the students to be more attentive during lessons	2.98	1.00	Agree
21.	Helps to broaden students' knowledge paradigm.	2.92	1.00	Agree
22.	Helps to make students' more focus and comprehend better.	3.08	1.01	Agree
23.	Assists the students to find related knowledge and information for learning.	3.02	1.01	Agree
24.	Enables the students to express their ideas and thoughts better.	3.20	1.02	Agree
	<b>Overall Assessment</b>	<b>3.02</b>	<b>1.01</b>	<b>Agree</b>

Table 4 reveals that the overall assessment mean score for the level of teaching and learning with computer technology resources in private senior secondary schools in AMAC was 3.02, which is greater than the 2.50 cut-off point. This means that the level of teaching and learning with computer technology resources in private senior secondary schools in AMAC was effective because most teachers agree that the use of computer technology resources could enhance teaching and learning.

**Hypothesis**

HO<sub>1</sub>: There is no significant relationship between teachers' computer technology resources utilization, and teaching and learning in private senior secondary schools in AMAC.

**Table 4:** Analysis of Relationship between Teachers' Computer Technology Utilization, and Teaching and Learning in Private Senior Secondary Schools

Variables	N	Mean	SD	r	p-value	Decision
Teachers' Computer Technology Resources Utilization	240	2.99	1.00			Ho <sub>1</sub> Not
Teaching and Learning	240	3.02	1.01	0.36	0.00	Accepted

(*P < 0.05 level of significance*)



Table 4 shows that the calculated value of Pearson product-moment correlation ( $r$ ) were 0.36, which indicated that there is a positive relationship between teachers' computer technology resources utilization, and teaching and learning in private senior secondary schools in AMAC. Furthermore, the p-value of 0.00 is less than 0.05(5%) significance level. This means that there is a significant relationship between teachers' computer technology resources utilization, and teaching and learning in private senior secondary schools in AMAC. The hypothesis was not accepted.

## Discussion

From the result of the data analysis, this study revealed that computer technology resources were available and used in most private senior secondary schools in AMAC. Some of these available computer technology resources were not in use in some schools while some of them are not available in some schools. For instance, 69% shows that internet facilities were available and used, 67% shows that smartphones were available and used, 61% shows that desktop computers were available and used, 57% shows that laptop computers were available and used while 48% shows that tablets were available and used.

This study showed that the level of computer technology resources utilization by the teachers in private senior secondary schools was moderate. Furthermore, item 9 had the highest mean score of 3.07, which means that the item was mostly used while item 11, which had the lowest mean score of 2.77 was rarely used by the teachers for teaching and learning. The findings of the study supported the findings of Bhalla (2013) who stated that teachers often used computers to update subject knowledge and teaching skills, develop lesson plans, prepare additional instructional material, notify relevant information via internet, and prepare question banks.

The study revealed that the level of teaching and learning with computer technology resources in private senior secondary schools in AMAC was effective because most teachers agree that the use of computer technology resources could enhance teaching and learning. Furthermore, item 18 had the highest mean score of 3.17, which means that most teachers agreed that the use of computer technology resources could help to motivate the students to interact actively during the classroom activities while item 17, which had the lowest mean score of 2.68 means that most teachers did not agree that the use of computer technology resources could encourage the students to communicate more with their classmates. This finding is in agreement with the study of Zamfir (2008) that the use of computer applications within teaching and learning of management could have positive effects, on one hand, and negative effects, on the other hand. Though using computer applications in education has shown educational benefits, changing traditional teaching and learning is yet a challenging process. Some progress is being made, but there is a need for more and advanced research aimed at improving and generalizing the positive effects of using computer applications in education and eliminating the negative effects of these practices.

Furthermore, the study showed that there was a significant relationship between teachers' computer technology resources utilization, and teaching and learning in private senior secondary schools in AMAC. This indicated that teachers' computer technology resources utilization facilitated teaching and learning in private senior secondary schools in AMAC. Thus, if the level of teachers' computer technology resources utilization is improved, the level of teaching and learning in private senior secondary schools would be improved.

## Conclusion

The need for computer technology resources utilization in teaching and learning in private senior secondary schools in AMAC cannot be overemphasized. The teaching and learning in the Nigerian senior secondary schools most importantly in the 21st century have developed within the framework of theory and practice. The teachers in AMAC need to be well informed the need for computer technology resources utilization in teaching and learning in private senior secondary schools. This might be necessary in the area of teaching and learning which could be done through the effective use of computer technology resources in the classroom. Therefore, this study showed that there was a significant relationship between teachers' computer technology resource utilization, and teaching and learning in private senior secondary schools in AMAC, which led the researcher to conclude that teachers' computer technology resources utilization facilitated teaching and learning in private senior secondary schools in AMAC. Also, if the level of teachers' computer technology resources utilization is improved, the level of teaching and learning in private senior secondary schools would be improved.

## Recommendations

- Based on the findings of this study, the following recommendations were made:
1. The management of private senior secondary schools should encourage the use of computer technology resources by providing enough of these resources and ensure that they are properly used by the teachers in order to enhance teaching and learning.
  2. Efforts should be made by teachers to upgrade their knowledge of computer technology utilization for effective teaching and learning.
  3. Management of private senior secondary schools should also help to improve the training of teachers in the use of computer technology resources in teaching and learning through seminar, workshop and in-service training.

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