



Utilization of information and Communication Technology in the teaching and learning of Computer Studies in Private and Public Secondary Schools in Cross River State

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Abstract

This research evaluated the level of utilization of ICT facilities in secondary schools across the three senatorial districts of Cross River State. It also review the extent of exposure of teachers in the use of ICT facilities in the implementation of the teaching pedagogy. A descriptive survey research was adopted for the study. The population consisted of all students and teachers in secondary schools across the three senatorial districts (South, Central and North). The sample comprised ninety (90) computer teachers selected from thirty schools (fifteen private and fifteen public) selected using stratified and simple random sampling techniques. The sample of the students consisted of three hundred students selected using a combination of stratified and simple random sampling techniques. The instrument for data collection was a questionnaire developed by the researcher, titled Students and Teachers Utilization of ICT facilities for teaching and Learning (SATUIFTL) and students assessment test which was administered after two weeks of engagement with the students. The SATUIFTL was used to collect information on the utilization of ICT facilities in the teaching of computer studies from the selected respondents. The instrument was validated by three experts in measurement and evaluation to ensure face and content validity of the instrument. The internal consistency reliability of the instrument was ascertained using Cronbach Alpha with a 0.89 coefficient. The data collected were analyzed using frequency counts, percentage while the independent t-test and the analysis of variance (ANOVA) was further used to evaluate and test the research hypotheses. The results from the analysis showed that the level of utilization of ICT facilities by teachers teaching Computer studies in private schools is higher than their counterparts in public secondary schools. The results further showed that there is significant difference in the level of academic performance between students who were taught with ICT facilities and those who were taught

with the traditional chalkboard method. Finally, the result showed that there is no significant difference in the academic performance among students taught with ICT facilities across the senatorial zones.

Key words: ICT, Computer Studies, Teaching, Learning, Public, Private

Introduction

The achievement of effective teaching and learning in schools has been a subject of interest for all education stakeholders and actors in recent times. The main source of concern are the fall in the quality of the graduates of most public and private secondary schools and the shortfalls of the facilities needed for effective teaching and learning. Effective teaching is vital particularly when we consider teaching and learning as the acquisition of knowledge and skills to enable one become a more useful member of the society. Teaching involves deliberate activities and processes aimed at the development of the less matured and inexperienced mind. Teaching embraces forms of process, behaviour and activities which do not succumb to explanation by a single theory (Olorundare, 2006). Teaching therefore, is a dynamic process in education. In the classroom situation, ICT has been distinguished as indispensable tools for effective teaching and learning of computer and computer related subjects. The use of ICT in classroom situation sees the teachers as facilitator rather than dispenser of knowledge. It is therefore necessary to embrace the use of ICT in teaching and learning so as to avoid being eliminated from the global village of internet, extranet and intranet. The National Policy for Information Technology (2001) described ICT as any equipment or inter-connected system of equipment that is used in the automatic acquisition, storage, manipulation, management, control, display, switching and transmission of information. In another related concept, ICT is conceptualized as communication in whatever forms used, accessed, relayed and transmitted to communication or send and received information (Olorundare, 2006).

In this context, ICT are tools that comprise electronic devices which are utilized for information and communication needs of institutions. Such electronic devices include computer (hard and software) networking, telephone, video, multimedia and the internet. In the classroom situation, utilization of ICT tools for teaching and learning is imperative. Nwankwudo *et al.*, (2006), noted that ICT provides student and teachers with practical and functional knowledge of the computer, the internet and other associated areas of ICT. Classroom teachers are expected to adequately equip themselves with professional skills in ICT. This will enable their students to perform better in classroom learning. ICT encourages active participation in classroom interaction as knowledge is shared. ICT provides more meaningful learning experiences and encourages both action and reflection on the part of the learner. It motivates and makes learning experiences clear to the students. It also accommodates differences between learners. ICT encourages students to learn independently and supports classroom settings that are safe and conducive for effective teaching and learning. Mohammed (2006) noted that teachers are expected to utilize ICT facilities to inculcate relevant knowledge to students. Any classroom teacher with sufficient ICT skills will have his or her students perform better in classroom learning. The National Policy on Education states that education is an instrument for effecting national development (FRN, 2004). It makes the incorporation of ICT into teaching-learning process a vital instructional tool in fostering the national educational goals and development. To buttress this, the development and role of ICT plays in the academic sector is believed to set the pace for any form of innovation and changes that

can ever happen to any society. It is believed that the winds of change in today's education sector have made information communication technology to be programmed towards meeting the set educational goals.

There are challenges and concerns as a result of knowledge explosion due to the introduction of ICT in almost every field of human endeavor, which calls for an awakening in teaching profession likewise. Teachers need to be conscious of the quality of their teaching which is determined by the quality of teaching aids used such as chart, model-static, specimen and slides. As an information handling tool, ICT can be used in producing, storing, processing, distributing and exchanging of information. It therefore, implies that ICT could help teachers to be more effective in work-life and resourceful in content management.

The Federal Ministry of Education (2010) identifies the ICT policy on education stated as follows;

“The policy provides the needed guidance on what is expected in the entire process of ICT integration in education to all stakeholders in education. Its’ implementation, therefore, should lead to a speedy transformation of the teaching, learning and administration of education. This in turn will foster the production of graduates in the education system that can survive in the contemporary society, sustain national development and compete globally”. (p.3) cited from Olaleye & Abiodun-Oyebanji (2010)

Hence, these will make teaching tasks to become less cumbersome and productive thereby improving students' academic performance. Basically, the utilization of ICT-Driven instructional aides through CAI and other related and useful technologies is meant to serve as an orientation stimulus to support the teachers' teaching strategies and not to replace them. A paradigm shift from the traditional “chalk and talk” form of teaching to the use of ICT through modern technologies could make teaching-learning process more real and practical, thereby resulting to better performances of students academically. However, this hinges strongly on the ability and capability, as well as the effectiveness of teachers to incorporate teaching strategies such as CAI, which uses ICT Driven instructional aids in achieving the objectives of lesson at the classroom level. The benefits of ICT as an important tool in teaching and learning of wide range of topics in computer studies Ms. Word, Spreadsheets, power point, operating system , hardware and software could enable them understand and learn the subject better. Passive learning based on the outdated form of “chalk and talk” has widely characterized the 20th century style of teaching in Africa. This in-turn could pose a threat to development of a nation like Nigeria, having education as the instrument “par excellence” for effecting national development. Therefore, if Nigeria will meet up with the global technological advancement through the use of ICT, then, education must be given utmost priority and teacher education must be its guiding principle since no nation can rise above the standard of her teachers (FRN, 2004).

The Federal Ministry of Education (2010) has mandated the combination of ICT in education for speedy transformation of teaching, learning and administration of education as a positive step in the right direction. Therefore, it becomes pertinent that a study on the “Utilization of ICT in public and private Secondary Schools in Cross River State” be carried out to ascertain its impact on the learners. For ICT to enhance teaching for secondary schools, particularly in Cross River State, is through constant use of modern ICT tools by the teachers. However, the

use of modern ICT components can enhance teaching and improve quality education by making the present time teaching student centered; making the retention and accumulation of knowledge the main objective of teaching; ensuring teaching emphasizes hands-on activities where students lead discovery as well as ensure that students understand, apply and analyze facts. Hence the crux of this study was to examine the ways information and communication technology components can be integrated and used in teaching of Computer Studies in public and private secondary schools in Cross River State. The main purpose of computer education was for computer literacy and skills needed in the 21st century classrooms and outside the classroom. It goes beyond reading computer books and pamphlets. It really requires skills, abilities and competencies in the use of computer. For instance it requires digital literacy and skills, hardware literacy and skills, software literary and skills; and computer packages integration and usage skills. Others are networking skills, programming and multimedia systems literacy and skills.

The need for the utilization of ICT resources in teaching and learning situations is on the increase. The perceived prevalence and seriousness of incompetence and poor quality of education which is the result of non-application of ICT is one of the biggest problems plaguing the school system, globalization, quest for quality education and market competitiveness has posed more challenges for ICT to become indispensable tool for public and private secondary schools in Cross River State. This study therefore determined the utilization of ICT facilities in public and private secondary schools in Cross River State and its effect on students' academic performance.

Problem statement/ Justification

Secondary school education has become more complex due to change in curriculum and the need to bridge the gap between the work pace and the educational society. Increase in the number of students' enrolment as well as the number of programmes being offered is a serious concern. The poor performance of students in computer and computer related subjects is an issue that needs attention. The utilization of modern technology equipment in public and private secondary schools in Cross River State is reported that in most areas, there are ICT equipment and electricity to power the equipment, but are not effectively utilized while in other areas, they are paucity of ICT equipment which are often underutilized by the users. The information technological age offers ICT instructional strategies to improve the manual usage in teaching and learning and school administration. Innovative use of ICT in the administration process in most secondary schools in Cross River State Seems not to be widespread. This appears to be made difficult by several constraints which include lack of funds to sustain ICT Infrastructure, the inability of secondary school administrators to keep up with the pace of development in ICT, the lack of the staff with appropriate skills to manage ICT both at the strategic and operational levels, epileptic electricity supply or complete absence of it in schools affects institutional policies to support and guide the use of ICT. The low level of internet usage, inadequate computers and its accessories, and lack of internet access point result to a poor attitude towards the use of internet, the low level of application of ICT in secondary school system pose a serious threat to the ability of the school administrator to handle large volume of information at a fast rate and it also posed a threat to other policies implementation within the educational sector. Technophobia among the teachers is also an issue that militate against

the penetration of this technology in our secondary schools. These identified problems therefore provoked the researcher to conduct this research on the Utilization of ICT for teaching computer studies in public and private Secondary Schools in Cross River State.

Objective(s) of Study

The main objective of the study was to determine the level of utilization of information and communication technology (ICT) in the teaching and learning of computer studies in public and private Secondary Schools in Cross River State, specifically the study sought to determine the following

1. To investigate the level of availability of ICT facilities in public and private secondary schools in Cross River State.
2. Examine the extent to which students access and use ICT in learning in public and private secondary schools in Cross River state
3. Determine the level of utilization of ICT facilities by teachers in public and private secondary schools in Cross River state.
4. To investigate the influence of utilization of ICT facilities on students' academic achievement in computer studies in public and private secondary schools

Research Questions

- i. What is the level of availability of ICT facilities in public secondary Schools in Cross River State?
- ii. What is the level of availability of ICT facilities in private secondary Schools in Cross River State?
- iii. What is the level of utilization of ICT facilities by teachers in public secondary Schools in Cross River State?
- iv. What is the level of utilization of ICT facilities by teachers in private secondary Schools in Cross River State?

Research Hypotheses

- i. The utilization of ICT has no significant influence on the learning outcome of students in secondary school
- ii. There is no significant difference in the level of academic performance on students who were taught with ICT facilities across the three senatorial zones

Literature Review

A litany of definitions for ICTs were brought up in this review, all centering around the hardware and applications used for gathering, processing, storage and dissemination of information. According to the United Nations Development Programme (UNDP), in a UNESCO article (2008), ICTs are defined as —information handling tools—a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information. They include old ICTs of radio, television and telephone, and the new ICTs of computers, satellite and wireless technology and the internet. These different tools are now able to work together, and combine to form our networked world—a massive infrastructure of interconnected telephone services, standardized computing hardware, the internet, radio and television which reaches into every corner of the globe. Rouse (2015) defines ICTs as an umbrella term that cover communication devices or applications that include computers, televisions, radios, networks, satellites, video conferencing and eLearning. She also added that ICTs are always talked about in a particular context, like ICTs in education, libraries, health, etc. According to Elmoglobal (2017), ICTs in education means teaching and learning using ICTs.

Educational ICT tools are divided into three categories namely: input source, output and others. Input source includes such things as Personal computers (PCs), Tablets, applications software, student response systems, visualizer or document camera. Output source refers to such devices as projector, interactive boards, monitors, display, Television. Others include digital camera, digital recorders, switchers and other technologies. ICTs can lead to improved student learning and better teaching methods. In order to harness the full potential of ICTs in education, a nation must come up with policies regarding the implementation of such solutions. Policies are as important as the technological innovation itself. Policies encompass the master plan of what needs to be achieved within the political, economic and social context (Swarts, 2008).

In the work of Ngwu (2014), most ICT resources are not adequately available in schools. This therefore implies that, even though teachers are adequately trained and willing to impart the knowledge they have to students, they are stymied from doing so by the lack of technological equipment and laboratory facilities. The same research revealed a low extent utilization of ICT resources and related technologies in the schools under study. The research recommended provision of funds for procurement and maintenance of ICT resources, ensuring existence of functional computer laboratories, consistent power supplies in schools and provision of in-house training for teachers so that they keep in touch with the developments in ICT and related technologies. Egomo et al (2012), in their research paper titled — Availability and utilization of ICT tools for effective instructional delivery in tertiary institutions in Cross River state, Nigeria revealed that the availability of ICT tools for effective instructional delivery is relatively low, except for laptops, multimedia projectors and internet facilities. They went on to argue that this affects the quality of graduates produced from these institutions. The research recommended that ICT tools should be available in institutions of learning, teachers should make an effort to acquire these tools since they are an integral part of instruction delivery, government should come up with appropriate ICT policies and workshop training programmes

for teachers should be organized among teachers at all levels of education. Adedeji (2011) suggested that governments should fund the provision of ICT resources to schools for training because the findings of his research revealed that most ICTs available in schools were being utilized for administrative purposes. A research conducted by Kiptalam and Rodrigues (2011) revealed that the use of ICT and related technologies is still at an early stage of development and implementation. They noted that while the pace was slow in other instances, in some there was a faster absorption rate to the extent of some schools developing electronic content for their teaching and learning. Such material is available in CDs and DVDs.

Samuel and Bakar (2006) in their research paper titled —The utilization and integration of ICT tools in promoting English language teaching and learning: Reflections from English option teachers in Kuala Langat District, Malaysia revealed that there are insufficient laboratories in schools, internet is erratic, there are limited computer facilities for teachers, no central databases are used and no learning management systems are available for purposes of electronic learning. The research also revealed that there is insufficient courses and training, the teachers are not adequately trained, poor ICT integration, CD ROMS not working and never used, poor support from administration, negative attitude from teachers and lack of technical support skills from the laboratory technician. Generally the research proved that lack of infrastructure facilities is one of the many causes of poor ICT integration in schools. It is this researcher's view therefore that ICTs are neither adequately available nor being fully utilized in schools globally. In some cases resources are available, but not being fully utilized, but generally a lot needs to be done to improve the current scenario if schools are to fully benefit from the development and growth of ICTs and related technologies.

Mungai (2010), a teacher by profession, identified the following as factors that are hindering utilization of ICT: these are lack of qualified teachers since the few they have are overwhelmed, lack of electricity, which is a common problem in most African countries, inadequate computers, breakdown of the computers, higher prices for the procurement of ICT resources, burglary, computer phobia by both administrators and teachers, obsolete computers and increased moral degradation, that is abuse of such facilities as internet by people who watch inappropriate material, cyberbullying and other anti-social behaviors. Langat (2015) identified barriers hindering implementation of ICTs as shortage of infrastructure and resources, shortage of teachers, lack of clear digital curriculum, political factors, poor timing and poor planning, high cost of implementation, communication barriers, corruption, moral issues and high crime rates. This researcher made recommendations that would improve utilization as: all stakeholders needs assessment analysis, establishment of proper communication channels, professional development of teachers and technicians, establishment of digital curricula and creation of partnerships in education. Mahmood et al (2014) attributed lack of ICT utilization in schools to a number of factors. Firstly they highlighted lack of exposure and expertise on the part of teachers who are computer illiterate, against modern students who are quick to self-educate and highly computer literate. The second aspect is the forcing of teachers to use technology in the classroom without giving them ample time to learn, acquire and apply the technology appropriately. Another factor identified was lack of confidence amongst teachers, which again is attributed to lack of professional training.

According to Afshari et al (2009), there are manipulative and non-manipulative school and teacher factors that affect utilization of ICTs. Non-manipulative factors are those that cannot be influenced by the school, which include such factors as age, teacher experience, and computer experience of the teacher, government policy and availability of external support for the school. Manipulative factors refers to those the school can influence, which include such factors as teacher's attitudes towards ICTs, teachers ICT skills and knowledge, school commitment towards implementation of ICTs and availability of ICT support. Kivuli (2013) identified lack of all stakeholders' awareness of the importance of technology in teaching and learning as a hindrance factor. These include teachers, parents, students and the community at large. He also mentioned lack of ICT resources in schools and encouraged local software developers to work with schools in developing software ideal for training. Lack of professional development of principals and teachers in schools was also sited. Teachers need to be encouraged to use ICTs in schools and lack of time to integrate ICTs into existing curriculum was also sited to be a contributing factor.

According to Mingaine (2013), factors that affect ICT utilization in schools include the availability of electricity, cost of ICT infrastructure, School leadership and teacher skills available. It is this researcher 'view that, while there are a number of factors affecting and hindering utilization of ICTs in school, all of them can be minimized or completely reversed if necessary interventions are put in place.

According to Usman et al., (2019), ICT has a significant influence on the learning outcome of students. The study went further to revealed that students that were exposed and taught with ICT facilities performed better in similar concepts than their counterpart who were taught with the traditional method. The study went further to recommend that more funds should be provided for the procurement of ICT facilities.

Challenges Associated with the use of ICT Facilities

There is no complete set of a system without challenges surrounding its usage. The only antidote to such difficulties is one's readiness/preparedness, attitude and perception towards the system. In an attempt to use a new system, people should be ready to accept challenges that will confront them in their course of using or learning how to use the ICT facilities in their studies. Enochsson (2005) hinted that the socio-cultural background plays a key role leading to computer anxiety and feelings of low esteem among females in the use of technology. In a related study by Martey (2004) highlighted that the acceptance of ICT by libraries from 1996-2004, witnessed the slow application of ICT. The findings of the study attributed the slow pace in the acceptance of ICT to the high cost of ICT infrastructure, as well as lack of technical know-how. Tella & Mutulu (2008) added that one of the causes of low use of technology by females is lack of relevant competencies, which affects them more than males. Ford et al. (2001) reiterated that females find it tough to use technology when it comes to searching for information online more than males.

Methodology

This research adopted a survey research design. Survey research is defined as the collection of information from a sample of individuals through their responses to questions” (Check & Schutt, 2012). This type of research allows for a variety of methods to recruit participants, collect data, and utilize various methods of instrumentation. Survey research can use quantitative research strategies (e.g., using questionnaires with numerically rated items), qualitative research strategies (e.g., using open-ended questions), or both strategies (i.e., mixed methods). As it is often used to describe and explore human behavior, surveys are therefore frequently used in social and psychological research (Singleton & Straits, 2009). The survey research design was considered appropriate for this study because the research elicits data/information on the utilization of ICT for the teaching and learning of computer studies in secondary schools across the three senatorial zones of the state. The study was carried out in Cross River State. Cross River State has three senatorial zones which are the north with five (5) local government areas, the central with six (6) Local government areas and the south with seven (7) local government areas. This makes a total of eighteen local government areas in the state. The targeted population of the study was teachers, school administrators and students of secondary schools where computer studies are taught. The sampling technique that was adopted was the stratified and simple random sampling techniques. This was to ensure equal representation of the population under study. A structured and close ended questionnaire and students test items were used to collate data for this research. The questionnaire was titled Students and Teachers Utilization of ICT facilities for teaching and Learning (SATUIFTL). The instrument was developed based on the parameters to be measured. The instrument contained four sections; section A to elicit information on personal data of the respondents. Section B to elicit data on the utilization of ICT for teaching and learning. Section C test items to measure the students’ performance. Section D for school administrators. The instrument was faced validated by experts of test and measurement from Cross River State college of Education, Akamkpa and the University of Calabar. To establish the reliability of the instrument, the questionnaire was trial tested among private and public secondary schools within Akamkpa Local government Area. Data collected from the study was subjected to appropriate statistical analysis using SPSS.

Results

This section present the results obtained from the study.

Research Question 1: What is the level of availability of ICT facilities in public secondary Schools in Cross River State?

Table 1: Level of availability of ICT facilities in public Secondary Schools in Cross River State

S/N	Facilities	No. School	Available (A)	%A	Not available (NA)	%NA
1	Projector	15	4	26.67	11	73.33
2	Internet	15	0	0.00	15	100.00
3	Computer lab	15	8	53.33	7	46.67
4	Interactive screen	15	0	0.00	15	100.00

5	Multimedia	15	9	60.00	6	40.00
6	Video camera	15	0	0.00	15	100.00
7	LocalArea network	15	2	13.33	13	86.67
8	CAI	15	4	26.67	11	73.33
9	e-exam systems	15	0	0.00	15	100.00
10	e-learning platform	15	0	0.00	15	100.00

Source: Field Survey 2023

The results obtained in the table above showed that there was complete inadequate ICT facilities in the sampled schools. There was complete absent of internet facilities, interactive screen and video camera for real time recording of school activities. No e-exam systems and no e-learning platform.

Research Question 2: What is the level of availability of ICT facilities in private secondary Schools in Cross River State?

Table 2: Level of availability of ICT facilities in Private Secondary Schools in Cross River State

S/N	Facilities	No. School	Available (A)	%A	Not available (NA)	%NA
1	Projector	15	8	53.33	7	46.67
2	Internet	15	2	13.33	13	100.00
3	Computer lab	15	9	53.33	6	86.67
4	Interactive screen	15	0	0.00	15	100.00
5	Multimedia	15	5	33.33	10	66.67
6	Video camera	15	1	6.67	14	93.33
7	LocalArea network	15	6	40.00	9	60.00
8	CAI	15	7	46.67	8	53.33
9	e-exam systems	15	4	26.67	11	73.33
10	e-learning platform	15	5	33.33	10	66.67

Source: Field Survey 2023

The results in table 2 above showed relative presence of some ICT facilities needed for the teaching and learning exercise. An improvement over table 1.

Research Question3: What is the level of utilization of ICT facilities by teachers in public Secondary Schools in Cross River State?

Table 3: Level of Utilization of ICT facilities by teachers in public secondary schools

S/N	Items	N	VH	%	H	%	M	%	P	%	VP	%
1	Projector	90	12	13.33	3	3.33	16	17.78	20	22.22	39	43.33
2	Internet	90	6	6.67	4	4.44	26	28.89	14	15.56	40	44.44
3	Computer lab	90	28	31.11	6	6.67	20	22.22	17	18.89	19	21.11

4	Interactive screen	90	0	0.00	4	4.44	4	4.44	37	41.11	45	50.00
5	Multimedia	90	6	6.67	10	11.11	14	15.56	28	31.11	32	35.56
6	Video camera	90	0	0.00	3	3.33	6	6.67	29	32.22	52	57.78
7	LocalArea network	90	4	4.44	5	5.56	16	17.78		0.00	65	72.22
8	CAI	90	0	0.00	2	2.22	18	20.00	29	32.22	41	45.56
9	e-exam systems	90	0	0.00	4	4.44	16	17.78	40	44.44	30	33.33
10	e-learning platform	90	0	0.00	6	6.67	8	8.89	44	48.89	32	35.56

Source: Field Survey 2023

The table above showed below average exposure of teachers to the use of ICT facilities in teaching

Research Question 4: What is the level of utilization of ICT facilities by teachers in private Secondary Schools in Cross River State?

Table 4: Level of Utilization of ICT facilities by teachers in private secondary schools

S/N	Items	N	VH	%	H	%	M	%	P	%	VP	%
1	Projector	90	25	27.78	24	26.67	18	20.00	20	22.22	3	3.33
2	Internet	90	29	32.22	17	18.89	14	15.56	21	23.33	9	10.00
3	Computer lab	90	22	24.44	14	15.56	17	18.89	24	26.67	13	14.44
4	Interactive screen	90	24	26.67	21	23.33	14	15.56	11	12.22	20	22.22
5	Multimedia	90	20	22.22	19	21.11	22	24.44	19	21.11	10	11.11
6	Video camera	90	7	7.78	13	14.44	16	17.78	21	23.33	33	36.67
7	LocalArea network	90	24	26.67	12	13.33	15	16.67	26	28.89	13	14.44
8	CAI	90	20	22.22	15	16.67	15	16.67	22	24.44	18	20.00
9	e-exam systems	90	22	24.44	13	14.44	20	22.22	25	27.78	10	11.11
10	e-learning platform	90	21	23.33	18	20.00	15	16.67	22	24.44	14	15.56

Source: Field Survey 2023

The table above showed below average exposure of teachers to the use of ICT facilities in teaching

Research Hypothesis 1 (Ho): The utilization of ICT has no significant influence on the learning outcome of students in secondary school

Table 5: Influence of ICT on the learning outcome of students in secondary school

Group Statistics						
	STUDENTS GROUP	N	Mean	Std. Deviation	Std. Error Mean	T
STUDENTS SCORES	ICT	150	68.43	12.204	.996	18.482
	NO ICT	150	41.88	12.670	1.035	

Source: Field Survey 2023

Table 5 shows the results of the analysis using the independent t-test. From the results above, the calculated value of T is 18.482 while the critical value of T at 0.05 level of significance at $(N_1+N_2 -2)$ degree of freedom is 1.98. This results shows that there is a significant difference in the performance of students taught ICT facilities and those taught with the traditional method. Hence the null hypothesis is rejected.

Research Hypothesis 2 (Ho): There is no significant difference in the level of academic performance on students who were taught with ICT facilities across the senatorial zones

Table 6: Academic Performance Using ICT across the senatorial zones

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1011.960	2	505.980	3.333	.038
Within Groups	22317.380	147	151.819		
Total	23329.340	149			

Source: Field Survey 2023

The results in table 6 showed the analysis of the performance of students taught with ICT across the senatorial zones using ANOVA as a statistical tool. The computed F-value of 3.333 is less than the critical F-value of 4.61 at F (K-1, N-K) degree of freedom at 0.05 level of significance. This result led to the acceptance of the null hypothesis. The implication of this is that there is no significance differences across the senatorial zones on the performance of students taught with ICT.

Discussion of results

From the data collated from this study, it showed that, many secondary schools teachers in Cross River State lack exposure on the utilization of ICT for teaching this is attributed to the non -availability of ICT facilities in the state secondary schools. This finding is in support with the findings of Olaleye & Abiodun-Oyebanji (2010) which indicated that Information and Communication Technology (ICT) equipment for effective teaching and learning are deficient in schools. The findings showed that computer and accessories were poorly available in the schools and teachers are not exposed to computer training. All these militated against actual utilization of ICT in the school system. The findings from the study also showed that ICT has not been fully integrated into the curriculum of secondary school education in the State. The finding from the study also showed that the private schools in the state are better equipped with ICT facilities than the public secondary schools.

The findings in the study showed that exposure to ICT influenced the academic performance of the students positively. This was revealed on the significant difference in academic performance of students taught with ICT and their counterpart that are not taught with ICT. The finding was in tandem with the finding of Usman *et al.*, (2019), which revealed that students that were exposed and taught with ICT facilities performed better in similar concepts than their counterpart who were taught with the traditional method.

Conclusion

Based on the findings of this study, it can be inferred that secondary schools in Cross River State were not adequately provided with adequate ICT tools and facilities for effective teaching and learning. Teachers in the state public and private secondary schools utilized only available ICT tools for the teaching and learning process in the classroom. Teachers were not adequately exposed through training for effective utilization of ICT tools in the classroom. Poor funding and inadequate ICT trainings and workshops were some of the factors militating against the utilization of ICT facilities for effective teaching and learning in the state secondary schools.

Recommendations

Base on the findings, the following recommendations were made:

- i. More funds should be provided by government and proprietors for the procurement of ICT facilities
- ii. Regular workshops should be organized for teachers in the state secondary schools
- iii. The use of ICT should be encouraged in the instruction delivery in secondary school
- iv. Similar research should be carried out to ascertain gender influence on ICT usage in the Cross River State secondary schools
- v. Reliable power supply should be procured by appropriate authorities to sustain the ICT revolution.

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