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INFORMATION AND COMMUNICATION TECHNOLOGY UTILIZATION AND ACADEMIC PERFORMANCE OF JUNIOR SECONDARY SCHOOL COMPUTER STUDIES STUDENTS IN COMPUTER SOFTWARE APPLICATION IN UYO LOCAL GOVERNMENT OF AKWA IBOM STATE.

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ABSTRACT

The study was carried out to examine the effect of Information and Communication Technology Utilization and Academic Performance of Junior Secondary School Computer Studies Students in Computer Software Application in Uyo Local Government of Akwa Ibom State. In order to achieve this purpose, four research questions were raised and four hypotheses formulated to guide the study. The quasi-experimental design was used for this study. This design was considered suitable for the study because it's enabled the researcher to establish two groups under experimentation. The population of this study was 1,260 students who offered Computer studies in JSS 2 class in 2019/2020 Academic Session from fifteen (15) public secondary schools in Uyo Local Government Area. The sample size of this study was 300 JSS 2 students, selected from 6 public secondary schools in Uyo local government of Akwa Ibom State. Simple random sampling technique was used to select the respondents from each school. Two instrument were used for data collection titled "Computer Studies Achievement Test on Word processing application packages (CSAWPAP) and Computer Studies Achievement Test on Spreadsheet application packages (CSATSAP). Face validation was used for validating these instruments. The internal consistency of CSAWPAP, CSATSAP were determined using Kuder-Richardson formula 20 in Statistical Package for Social Sciences (SPSS). This method was used because it determines reliability of a test. The reliability coefficient of CSAWPAP, CSATSAP were .78 and .76, respectively. The experimental groups were taught using information and communication technology for two (2) weeks, 60minutes per period while the control group was taught the same topics without information and communication technology for the same number of days. The sampled students were pretested using all the instruments (CSAWPAP and CSATSAP) before the appropriate actual treatments. The actual treatments were done in the first and second week while the posttests were administered immediately after complete treatments. The scores from the posttest were recorded and used to provide information on students' academic performance across treatment groups. The research questions were answered using adjusted mean ($\bar{x}$) and standard deviation (S.D). The formulated null Hypotheses were tested at 0.05 level of significance using Analysis of covariance (ANCOVA). Based on the findings of the study, it was concluded that there is a significance effect of information and communication technology utilization on academic performance of Computer studies students in word processing and spreadsheet packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State.

KEYWORDS: **ICT, Utilization, Academic Performance, Junior Secondary School, Computer Studies Students, Computer Software Application, Uyo Local Government, Akwa Ibom State.**

INTRODUCTION

Information and Communication Technology (ICT) is the application of computers to retrieve, transmit and manipulate data, in education or other systems. One of the most vital contributions of ICT in education is easy access to learning and teaching process (Idris, 2020; Sharma, Gandhar, and Sharma, 2019). ICT covers any product that store, retrieve, manipulate, transmit or receive information electronically in a digital format. It consists of hardware, software, social networks, media, processing, and presentation of information (Mbaeze, Ukwandu, and Anudu 2020). ICT is an umbrella concept that include any communication device, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems as well as the various and application associated them, such as video conferencing and learning. ICT are often used in education, healthcare, libraries, security etc. According to UNESCO, ICT is a scientific technological and engineering discipline and management technique used in handling information in application and association with social, educational and cultural aspects. Therefore, the integration of information and communication technologies can help teachers and students toward educational planning and development (Manichander, 2019).

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Utilization has a sense of completeness or wholeness by which all essential elements of a system are seamlessly combined together to make a whole (Earle, 2018). Utilization of ICT in teaching is simply the correct and effective use of ICT in teaching and learning with the aim of achieving desired goals which could be improving student's academic performance. In teaching, simply handing out to learners a collection of websites or CD-ROM programs is certainly not utilization of ICT. In a properly crafted ICT integrated teaching lesson, ICT and other crucial curriculum contents such as content and pedagogy are molded into one entity. As a result, the quality of the lesson would somehow be diminished if the ICT ingredient were taken away from the ICT-integrated lesson (Williams, 2017).

Word processing is one of the widest spread applications software types in use today. Word processing program allows interactive editing of documents, enabling easy redrafting and merging of chunks of existing documents, without the need for extensive retyping. Most of the popular programs contain features such as spell checks, outlining, choice of fonts, line drawing and page layout facilities. Word processing software permits the user to manipulate the text. This is a very handy feature when laying out tables or columns of the text. A word processor allows the user to organize and present text on a page or several pages. They can be used to produce text based documents such as letters, reports and memos. Text organized in this way is referred to as a document.

A spreadsheet is a computerized equivalent of general ledger. It has taken the place of the pencil, paper, and calculator. Spreadsheet programs were first developed for accountants but have now been adopted by anyone wanting to prepare a budget, forecast sales data, create profit and loss statements, compare financial alternatives and any other mathematical applications requiring calculations. The electronic spreadsheet is laid out similar to the paper ledger sheet in that it is divided into columns and rows. Any task that can be done on paper can be performed on an electronic spreadsheet faster and more accurately. The problem with manual sheets is that if any error is found within the data, all answers must be erased and recalculated manually. With the computerized spreadsheet, formulas can be written that are automatically updated whenever the data are changed.

STATEMENT OF THE PROBLEM

Apart from the need to develop employable skills to the students, the performance of students in a developing country like Nigeria and in Akwa Ibom State is decreasing and has become a cause of concern to stakeholders in education in Nigeria. This could be attributed to the large class size, inadequate teaching facilities, etc. Hence, Ekula (2020) observed that with the increasing large class-size in states secondary schools in North-West Nigeria, there is a great need to provide ICT facilities that will enable the teachers to communicate effectively with the students. He maintained that theses ICT facilities will contribute in no small measure to increase their learning interest, motivate and increase their academic performance of students especially in software application packages. Ibraheem (2020) stated that poor academic achievement in skill oriented course could be attributed to many factors among which availability of facilities itself was considered as an important factor. This implies that the mastery of computer related concepts might not be fully achieved without the use of ICT facilities. The teaching of computer oriented courses like software application packages, without ICT facilities may certainly result in poor academic achievement.

To meet these challenges, secondary schools must embrace the new technologies and appropriate computer use for learning. The relationship between the use of computer and student performance in secondary schools is not clear, and there are contradictory results in the literature. Earlier economic research has failed to provide a clear consensus concerning the effect on students' achievement (Kamba, 2019). Since student performance is mainly

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explained by a student's characteristics, educational environment and teachers' characteristics, the use of computers may have an impact on these determinants and consequently the outcome of education. The differences observed in the performances of students are thus more related to the differentiated impact of computer usage on the standard determinants.

PURPOSE OF THE STUDY

The main purpose of the study was to determine the effect of information communication technology utilization on academic performance of Computer studies students in software application packages in junior secondary schools in Uyo local government of Akwa Ibom state.
Specifically, the study was designed to determine;

- The effect of information and communication technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo local government are of Akwa Ibom State.
- The effect of information and communication utilization technology on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo local government of Akwa Ibom State.

RESEARCH QUESTIONS

The following research questions were raised to guide the study;

- What is the effect of information and communication technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo local government are of Akwa Ibom State?
- What is the effect of information and communication technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo local government are of Akwa Ibom State?

RESEARCH HYPOTHESIS

In order to guide the study, the following null hypothesis were postulated and tested at 0.05 level of significance.

Ho_1; There is no significance effect of information and communication technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo local government area of Akwa Ibom State.

Ho_2; There is no significance effect of information and communication technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo local government area of Akwa Ibom State.

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DESIGN OF THE STUDY

The quasi-experimental design was adopted for the study. Specifically, the pre-test post-test non-equivalent control group design was employed for the study. This design was adopted because it is possible to have complete randomization of the subjects to avoid the disruption of school organization (streaming of classes). This particular design allows the use of intact class. Consequently, intact classes will be randomly assigned to experimental groups (E) and control group (C) respectively.

GROUPS

Experimental (E) O_1 X_1 O_2
Control group C O_1 X_2 O_2
Where E=   Experimental Group (Information and communication technology utilization).
C=   Control group (without Information and communication technology utilization).
O_1=   Pretest for all groups.
X_1=   Treatment given to E.
O_2=   Post-test for all groups.

AREA OF THE STUDY

This study was conducted in Uyo Local Government Area. Uyo Local Government Area is the state capital of Akwa Ibom, in South South Nigeria. The city became the capital of the state on September 23, 1987 following the creation of Akwa Ibom State from erstwhile Cross River State. Uyo is located at 4^o54^IN of the equator and 7^o37^IE of the prime meridian.

The population of Uyo, according to the 2006 Nigerian population Census which comprises Uyo and Itu, is 427,873.while the urban area, including Uruan, is 554,906. The people of Uyo are basically civil servants and speak Ibibio language. This area has about 70 schools including primary, secondary and tertiary institutions (polytechnics and universities).

POPULATION OF THE STUDY

The population of the study comprised of 1,260 Junior secondary school two (JSS2) computer studies students of 2020/2021 academic session in the fifteen (15) co-educational public Secondary Schools in Uyo Local Government Area.

SAMPLE AND SAMPLING TECHNIQUE

The sample for the study was 300 Students in the six intact classes of the JSS 2 students. Purposive sampling technique was employed. The criteria adopted include: Schools that have computer facilities and electricity was selected. Simple random sampling technique was used to select intact classes from the schools selected. The researcher with a flip of a coin labeled experimental group on one side and control group on the other side to determine which of the intact classes become the experimental groups and the one that becomes the control group.

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INSTRUMENTATIONS

A researcher made four instruments titled: Computer Studies Achievement Test on Word processing application packages (CSAWPAP) and Computer Studies Achievement Test on Spreadsheet application packages (CSATSAP) were used for this study. All the instruments consisted two sections (A & B). Section A contained demographic details about the students while section B contained 20 multiple choices (A-D) test items each. These test items were drawn mostly from Basic Education Certificate Examination (BECE) past questions but must be related to the concept of Microsoft office (Word processing application packages and Spreadsheet application packages. The test was used to gather the pretest and posttest scores when taught using Information and Communication Technology and without Information and Communication Technology. The researcher also prepared lessons note that was used in teaching the students the concepts.

VALIDATION OF THE INSTRUMENTS

All the instruments were subjected to both content and face validation. Both face and content were done by three groups of experts consisting of one Computer studies teacher, one Computer Education lecturer and one Test and measurement lecturer. Face validation of the instruments was help to ensure whether the instrument appears appropriately in terms of vocabulary and time allocation and suitability. The content validation of the instruments was ensured through strict adherence to the contents of the Software application packages as stated in the computer studies curriculum. The lesson notes were also being validated by experts in Computer Education and Measurement and Evaluation in Faculty of Education from University of Uyo, Uyo respectively.

RELIABILITY OF THE INSTRUMENTS

The researcher conducted a trial test of the Word processing application packages (CSAWPAP) and Computer Studies Achievement Test on Spreadsheet application packages (CSATSAP) to estimate the internal consistency of the instruments. The instruments were administered to a class of J.S.S 2 students from a school in the population but not used for the study. One intact class of 50 students was used for the trial testing. The internal consistency of CSAWPAP and CSATSAP were determined using Kuder-Richardson formula 20 in Statistical Package for Social Sciences (SPSS). This method was being used because it determines reliability of a test in which the items are dichotomously scored (Orluwene, 2012). The reliability coefficient of CSAWPAP and CSATSAP were .78 and .76. These coefficients revealed that all instruments were reliable.

EXPERIMENTAL PROCEDURE

The experimental groups were taught using information and communication technology for two (2) weeks, 60minutes per period while the control group was taught the same topics without information and communication technology for the same number of days. The sampled students were pretested using all the instruments (CSAWPAP and CSATSAP before the appropriate actual treatments. The actual treatments were done in the first and second week while the posttests were administered immediately after complete treatments. The scores from the posttest were recorded and used to provide information on students' academic performance across treatment groups.

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METHOD OF DATA COLLECTION

After appropriate permission have been granted by the principals of sampled schools, the four instruments for data collection for this study were administered to the students before experimental treatment. Scores obtained at this stage served as pre-test scores. After treatment, a post-test was administered using the instruments to obtain the post-test scores. This exercise was carried out by two research assistants of the two schools trained by the researcher.

METHOD OF DATA ANALYSIS

The research questions were answered using adjusted mean ($\bar{x}$) and standard deviation (S.D). The formulated null Hypotheses were tested at 0.05 level of significance using Analysis of covariance (ANCOVA).

DECISION RULE

For hypothesis to be rejected, the sig. (2-tailed) value must be less than or equal to .05 alpha level of significance. Then to be retained, the sig. (2-tailed) value must be greater than .05 alpha level of significance. The researcher formulated a scale and used to answer the research questions. The scale is shown as below:

Mean score			Remark
0	-	49	Low extent
50	-	100	High extent

RESULTS OF DATA ANALYSIS

Research Question One: To what extent is the effect of Information and Communication Technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo local government area of Akwa Ibom State?

Table 1: Pretest and Posttest Mean of students' Academic Performance in word processing application packages

Group	N	Pretest X_1	Posttest X_2	Mean Gain
ICT Utilization (experimental group)	150	29.00	67.80	38.80
Without ICT Utilization (control group)	150	29.30	28.40	0.90

From the result in table 1, it is revealed that the posttest means and standard deviation for students taught word processing through Information and Communication Technology utilization is 67.80 and 6.69 while that of students taught without Information and Communication Technology utilization is 28.40 and 5.92. Therefore, the extent of effect Information and Communication Technology utilization on academic performance of Computer studies students in word processing application packages is high. The pretest mean

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scores for students taught through Information and Communication Technology utilization and without are 29.00 and 29.30 respectively. This shows equivalent of the group before treatments.

Research Question Two: To what extent is the effect of Information and Communication Technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo local government area of Akwa Ibom State?

Table 2: Pretest and Posttest Mean of students' Academic Performance in spreadsheet application packages

Group	N	Pretest X_1	Posttest X_2	Mean Gain
ICT Utilization (experimental control)	150	27.67	66.87	39.20
Without ICT Utilization (control group)	150	27.67	28.93	1.26

From the result in table 2, it is revealed that the posttest means and standard deviation for students taught spreadsheet through Information and Communication Technology utilization is 66.87 and 6.33 while that of students taught without Information and Communication Technology utilization is 28.93 and 5.04. Therefore, the extent of effect Information and Communication Technology utilization on academic performance of Computer studies students in spreadsheet processing application packages is high. The pretest mean scores for students taught through Information and Communication Technology utilization and without are 29.67 and 29.67 respectively. This shows equivalent of the group before treatments.

Null Hypothesis One: There is no significance effect of information and communication technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State.

Table 3: Summary Analysis of Covariance (ANCOVA) of Pretest and Posttest Scores of students' Academic Performance in word processing application packages

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	116461.19	2	58230.60	1458.74	.00	.91
Intercept	31591.11	1	31591.11	791.39	.00	.73
PRETESTWORDPROCESSING	34.19	1	34.19	.86	.36	.00
ICT	116260.58	1	116260.58	2912.45	.00	.91
Error	11855.81	297	39.92			
Total	822400.00	300				
Corrected Total	128317.00	299				

From the result in table 5, the sig or p-value of .00 is less than the .05 alpha level of significance. This implied the formulated null hypothesis which stated that there is no

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significance effect of information and communication technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State is rejected. Therefore, there is a significance effect of information and communication technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State.

Null Hypothesis Two: There is no significance effect of information and communication technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State.

Table 4: Summary Analysis of Covariance (ANCOVA) of Pretest and Posttest Scores of students' Academic Performance in spreadsheet application packages

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	107932.16	2	53966.08	1644.76	.00	.92
Intercept	21789.50	1	21789.50	664.09	.00	.69
PRETESTSPREADSHEET	11.83	1	11.83	.36	.55	.00
ICT	107920.33	1	107920.33	3289.16	.00	.92
Error	9744.84	297	32.81			
Total	806000.00	300				
Corrected Total	117677.00	299				

From the result in table 6, the sig or p-value of .00 is less than the .05 alpha level of significance. This implied the formulated null hypothesis which stated that there is no significance effect of information and communication technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State is rejected. Therefore, there is a significance effect of information and communication technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State.

DISCUSSION OF THE FINDINGS

The findings of this study were discussed based on the hypotheses formulated for this study as follows:

Information and Communication Technology Utilization and Academic Performance of Computer Studies Students in word processing application packages

The results of the analysis revealed that students who were taught word processing through utilization of information and communication technology had mean score of 67.80 while those taught word processing through without information and communication technology had mean score of 28.40. Though the post-test mean were higher than the pre-test mean score, those taught word processing through utilization of information and communication technology performed better than those taught without utilization of information and communication technology. From this finding, it was concluded from the result that since information and communication technology utilization in teaching yielded a

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higher mean score, this depicted that information and communication technology was more effective in improving students' academic performance in word processing. This result is agreed with Stephen, Mbugual and Edward (2015) that reported that integration of information and communication technology in teaching influence students' academic performance positively.

Information and Communication Technology Utilization and Academic Performance of Computer Studies Students in spreadsheet application packages

The results of the analysis revealed that students who were taught spreadsheet through utilization of information and communication technology had mean score of 66.87 while those taught spreadsheets without information and communication technology had mean score of 28.93. Though the post-test mean were higher than the pre-test mean score, those taught word processing through utilization of information and communication technology performed better than those taught without utilization of information and communication technology. From this finding, it was concluded from the result that since information and communication technology utilization in teaching yielded a higher mean score, this depicted that information and communication technology was more effective in improving students' academic performance in word processing. Furthermore, the finding shows the rejection of hypothesis 2 which state that there is no significance effect of information and communication technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State. This result is agreed with Stephen, Mbugual and Edward (2015) that reported that integration of information and communication technology in teaching influence students' academic performance positively.

SUMMARY OF FINDINGS

The findings can be summarized as follows:

The result obtained in testing hypothesis 1 showed that there is a significance effect of information and communication technology utilization on academic performance of Computer studies students in word processing application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State. Result from testing hypothesis 2 revealed that there is a significance effect of information and communication technology utilization on academic performance of Computer studies students in spreadsheet application packages in junior secondary schools in Uyo Local Government Area of Akwa Ibom State. From the results obtained it is revealed that there was a higher mean score of the experimental groups (information and communication technology utilization) over the control groups (without information and communication technology utilization). This means that utilizing information and communication technology by teachers in teaching concepts make teaching effective and thus, enhance student's academic performance. Therefore, computer studies teachers should key into this development if they want their students to eradicate poor academic performance of students in computer studies.

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CONCLUSION

On the basis of the findings from this study, it was concluded that information and communication technology utilization in teaching promote learning and improve academic performance of students in computer studies.

RECOMMENDATIONS

Based on the study findings, it is recommended that;

- Computer studies teachers should forfeit the conventional strategy in teaching and adopt information and communication technology utilization.
- Government should make computer facilities to be available in all schools.
- Government should always have routine inspection to make sure that the computer facilities are always used for teachings.
- The school administrators and educational institutions should periodically organize workshops and seminars to enlighten teachers in training, potential and serving teacher to rub minds together so as to update their teaching skills and methodology.

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