

## The Utilization of Information and Communication Technology in the Teaching and Learning of Basic Science in Upper Basic Schools in Anambra East Local Government Area of Anambra State, Nigeria.

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### ABSTRACT

The research was carried out to investigate the utilization of information and communication technology (ICT) in teaching and learning of basic science in upper basic schools in Anambra State. The research design used was a survey research design. Three (3) research questions and two (2) null hypotheses guided the study. Hundred (100) students were randomly selected out of seven hundred and eighty one (781). Simple random sampling techniques was used for the study. The instrument used for data collection was a structured questionnaire developed by the researcher. The reliability coefficient of 0.89 was established using Pearson Product moment correlation coefficient. The research questions were analyzed using mean, standard deviations and z-test statistic at probability level at 0.05 to test the hypotheses. Suggestions and recommendations were made and one of the recommendations is that government should ensure that Information and Communication Technology (ICT) facilities should be provided in schools.

Keywords: Utilization of Information, Communication Technology and hypotheses

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### INTRODUCTION

In Nigeria today, the level of growth of information and communication technology has been on a steady increase as the world of technology continues to evolve. The academic achievement of students has suffered so many setbacks in the past but the introduction of advanced information and communication technology in education system in Nigeria has no doubt increased the academic achievement of students. This effect is obvious in the junior category. The study of subjects like basic science requires a lot of advanced technology in most of the secondary schools in Nigeria. The study of basic science in upper basic schools is of great importance as it is the prerequisite to become a science student. Students enjoy attending the basic science class because it is full of practicals.

According to [1] Information and Communication Technology (ICT) is a complete set of activities which is outwardly facilitated by the use of electronic such as processing the rate of

transmission and display of information. [2] refers to ICT as the handling and processing of information (texts, images, graphs, instruction etc) for use, by means of electronic and communications device such as computers, cameras and telephone. ICT is an umbrella term that includes all technologies for the manipulation and communication of information. It encompasses any medium used to record information (magnetic disks/tapes, optical disks (CD rooms/ DVD/ Rom, flash memories) Technology for broadcasting information (Radio, television and satellite) the technology of communicating through voice and sound or image (microphone, camera, loudspeaker, telephone, cellular phone etc. [3] asserts that it is important in teaching and learning as it guarantees unrestricted access of teachers to relevant information and development in subject area as well as the provision of efficient and effective tools to take care of students individual differences.

Integrated science is a subject vital and effective for the nations development. It is a means of extending man's knowledge of himself and his environment, making use of data collecting and theorizing processes from the foundational basics. [4] defined integrated science as an approach to the teaching and learning of science in which concepts and principles are presented so as to express the fundamental unity of scientific fields. The teaching and learning of integrated science in junior secondary schools has helped to accelerate scientific potentials and innovations as recorded in the area of science and technology in the world. When ICT combines with the teaching and learning of integrated science in junior school, it creates a channel for students to obtain a huge amount of

#### METHODOLOGY

The research design was survey research design the study was carried out in selected secondary schools In ANAMBRA east local government area of Anambra state the population of the study comprises of all the students in the junior secondary class two (JSS2) the total number of the student is seven hundred and eighty one (781) random sampling techniques was employed for this study. A total number of one hundred students were randomly selected from four schools which were used for the study. A total number of twenty five students each were selected from each school. The instrument used for data collection was a questionnaire develop by the researcher which contained twenty six items drawn on a four point likert scale of strongly agree-SA (4), Agree -A(3) Strongly Disagree-SD (2) Disagree-D (1) designed to elicit information for the research questions. The question was used by the researcher as the primary source of data collection for the study. Section A was designed to collect information on the demographic data of the respondents, while section B was designed to collect information on the utilization of information and

#### PRESENTATION AND ANALYSIS OF DATA

##### RESEARCH QUESTION 1

To what extent do teachers utilize the information and communication

human experience and guide through the global communities. In this way, the students do not only extend their personal views, thoughts, experiences and potentials, but also can learn to live in the real world. The use of ICT in teaching and learning is a relevant and functional way of providing education to learners in order to assist them in obtaining the requirement for the work of works. [5] posits that with the aid of ICT teachers can take students beyond traditional limits, ensure their adequate participation in teaching and learning process and create vital environment to experiment and explore the teaching and learning of integrated science in junior secondary school in Nigeria as the role of the use of technological advance processes in teaching and learning become of great importance and a major topic of discussion in Nigeria.

communication technology in teaching and learning of basic science. The instrument was validated by a lecturer in measurement and evaluation department of Nwafor Orizu College of Education the reliability of the study was determined using a test retest method it was carried out with twenty (20) respondents selected from other schools that were not part of the target population to determine the reliability of the instrument. The reliability of 0.89 Pearson Product- Moment Correlations Co-efficient was established. The researcher used questionnaire to collect data from the respondents. Direct method was used to administer and collect the questionnaires by the researcher. A trained teacher in the field of research also helped the researcher in administration and collection of the questionnaires after completion by the respondents. The reason is to ensure accuracy of the responses. Mean and standard deviation were used to analyze the research questions. T-test was used to test the null hypothesis. Mean score above 2.50 was accepted and the mean score below 2.50 were rejected

technology (ICT) facilities in integrated science?

TABLE 1: Availability of information and communication technology(ICT) facilities in integrated science

S/N	ITEMS	MEAN	SD	REMARKS
1	Radio	3.82	0.40	Accepted
2	Satellite	3.48	0.61	Accepted
3	Interactive cds	2.25	1.04	Rejected
4	Telephone	3.85	0.45	Accepted
5	Multimedia projector	3.24	1.46	Accepted
6	Video player	3.45	0.75	Accepted
7	Closed circuit television	1.95	0.95	Rejected
8	Screen	3.41	0.68	Accepted
9	Functional computers	3.82	0.38	Accepted
10	Internet	3.62	0.68	Accepted
11	Stand by generator	3.74	0.53	Accepted

The analysis on the table1 shows that items 1, 2, , 4, 5, 6, 8, 9, 10, 11 with their corresponding mean were accepted and their mean scores were 2.50 and above while the item 3 and 7 have mean scores below 2.50, which were rejected, Therefore, the result shows that radio, satellite, telephone, video player,

functional computer, multimedia projector, screen, internet, and stand by generators are the ICT facilities that are readily available and regularly used.

#### RESEARCH QUESTION 2

To what extent do teachers utilize the ICT facilities in teaching integrated science students?

TABLE 2 the extent teachers utilize the ICT facilities in teaching integrated science students

S/N	ITEMS	MEAN	SD	REMARK
1	Giving online organizational informational about courses	3.82	0.5	accepted
2	Subscription for online examinations	2.21	0.97	rejected
3	Online registration and follow up of students activities	3.16	1.02	accepted
4	Obtaining internet materials for research and publication	2.60	1.10	accepted
5	Using instructional packages in digital audio and cd roms for instruction	3.17	1.02	accepted
6	Giving students assignments download internet materials	2.55	1.07	accepted
7	Using email to send information to students on assignment	2.62	1.05	accepted
8	Distribution of learning materials task for students	2.62	1.05	accepted

In table 2 above, items 1,3, 4, 5, 6, 7, 8 were accepted while item 2 has a mean score below 2.5 and were rejected

### RESEARCH QUESTION 3

To what extent they utilize ICT training creates on impact on the use of resource?

Table3: The extent they utilize ICT training creates on impact on the use of resources

S/N	ITEM	MEAN	SD	REMARKS
1	Training on information retrieval through the use of flash drives, CDs ROMS	3.30	0.80	Accepted+
2	T raining on how to locate, evaluate and use online materials for course designing	3.48	0.65	accepted
3	Training on tele conferences	2.65	1.15	accepted
4	Training on the use of statistical software	3.17	1.02	Accepted
5	Training on access to pdf files	3.17	1.02	Accepted
6	Training on muitimedia lesson delivery such as power point presentation	2.55	1.07	Accepted
7	Training on virtual library	2.65	1.05	Accepted

In table3 above, items 1, 2, 3, 4, 5, 6, and 7 have a mean score of 2.5 and above were all accepted

### RESEARCH HYPOTHESIS1

There is no significant difference in the opinions of the respondents on the extent teachers utilize the ICT facilities

TABLE 4: Table showing the mean scores of the opinions of the respondents on availability of ICT facilities.

	MEAN	S.D	N	X-LEVEL	Z-CAL	ZERITE
H1	13.47	5.28	50	0.05	2.85	1-96
H0	10.56	4.90	50			

From the table above,the mean and standard deviation of the respondents were 13.47 and 5.28 respectively. While that of the respondent on the non availability of ICT facilities are 10.56 and 4-90. The z-cal was found to be 2.85 which are greater than the z-critical which is 1-96 at 0.05 level of significance therefore, the null

hypothesis which stated that there is no significant difference in the opinions of the respondents on the extent teachers utilize the ICT were rejected.

### RESEARCH HYPOTHESIS2

There is no significant difference in the opinions of the respondents on the extent of usage of ICT facilities by the integrated science teachers.

TABLE 5: Table showing the scores of the opinion of the respondents on the extent of usage of ICT facilities by the integrated science teachers

	MEAN	S.D	N	X-LEVEL	Z-CAL	Z-CRITICAL
H1	16.35	2.72	50	0.05	2.55	1.96
H0	4.65	1.22	80			

From the table above z-calculated is greater than z-critical, therefore the null hypothesis which stated that there is no significant difference in the opinions of

the respondents on the extent of usage of ICT facilities by the integrated science teachers were rejected.

#### DISCUSSION AND FINDING

The discussion of findings in table 1 shows the result of the extent to which teachers utilize ICT facilities in integrated science shows that the facilities that are available and utilize by the teachers in teaching include, radio, satellite, telephone, video player, functional computers ,internet and stand by generators. It was also observed from table 1 that facilities such as interactive CDS, Multimedia Projector, and Closed Circuit Television (CCTV) screen are not available and so are not regularly used

Analysis from table 2 for extent to which ICT facilities are utilized for instruction shows the understanding of the importance of the utility of ICT in teaching and learning. It is observed that giving online organizational information about course, registration and follow up of students activities, obtaining research materials for publications, distribution of learning tasks for students are among the extent to which ICT facilities are utilize by the teacher for instruction. Subscription for

online examination and using email to send information to student about an assignment was not accepted in the table. This is due to the challenges that face the utility of ICT in teaching and learning the challenge include poor technological advancement and poorly equipped ICT facilities in the educational system.

TABLE 3 show the extent to which utilization of ICT training creates an impact on the use of resources. It was observed that training on information retrieval through the use of flash, CDS etc were all accepted

TABLE 4 reveals that there is a significant difference in the opinions of the respondents on the availability of ICT facilities by the integrated science teachers this result of this study extends to the findings of [6] which states that the major reason of ICT is to facilities and provide opportunity for active involvement of students in teaching and learning process and hence enhances their thinking ability.

#### RECOMMENDATIONS

From the findings of this study, the following recommendations were made

1. Government should ensure that ICT facilities should be provided in school
2. Individuals and government should assist schools especially those in the rural areas with the new technologies used in teaching and

learning process such as computers, projectors etc to improve learning

3. Government should set up standards, training and computer personnel's analysts that will educate the teachers on the use of the ICT facilities as most teachers shy away from using them due to lack of knowledge

#### REFERENCES

1. Ajayi, A. J. (2008). Towards effective use of Information and Communication Technology (ICT) for teaching in Nigerian colleges of Education. *Asian Journal of Information Technology* 7(5), pp 210-214.
2. Jimoh, A. T. (2007). Students' attitude toward ICT in Nigeria tertiary institutions. *EDVC focus* 1(1): 73-79.
3. Olorundare, A. S. (2006). Utilization of ICT in curriculum development implementation and Evaluation. Lead paper presented at the National Conference on ICT. University of Nigeria, Nsukka.
4. Rodriguez, F. and Wilson, E. (2000). Are poor countries losing the information Revolution? Mfo Dev working paper Washington D. C. World Bank.

[www.idosr.org](http://www.idosr.org)

5. UNESCO & UNICEF (1991).  
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