Investigation on the level of ICT Awareness among Secondary School Teachers in Sokoto State – Nigeria

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ABSTRACT

This research investigates the level of awareness on ICT among secondary school teachers. It focuses on the secondary school teachers in Nigerian context specifically Sokoto metropolis. In undertaking this research, a sample of four hundred (400) questionnaires was distributed to selected secondary school teachers of which 365 copies of the questionnaires were duly answered and returned by the respondents. Hence, these data were analyzed using simple frequencies, percentages and chi-square methods. Conclusively, this research has shown that level ICT penetrating Sokoto state secondary school teachers is growing rapidly. Also majority of secondary schools have ICT facilities. But the level of ICT training to teachers is fair because the difference between trained teachers and untrained teachers is negligible. In addition, very few numbers of teachers are not using ICT facilities in teaching and learning. This is identified to be attributed to lack of proper training on how to use the available ICT facilities and constant power supply. It is recommended that proper training should be continuously given to all staff in all levels on how to use the available ICT facilities. Furthermore, constant power supply should be provided to enable teachers to use these ICT facilities any time required.

Keywords: ICT**,** Teachers, Investigation, Sokoto State, Education, Secondary School

I. INTRODUCTION

Information Communication Technology (ICT) refers to the set of technologies that are applied in the process of collecting, storing, editing, retrieving, and transfer of information in various forms [1]. The usage of ICTs in Nigeria and in African countries generally is increasing and rapidly growing. However, while there is a great deal of knowledge about how ICTs are being used in developed countries, there is no much information on how ICTs are being introduced into schools in developing countries [2].

The application of ICT enable a powerful learning environment and it transforms the learning and teaching process in which students deal with knowledge in an active, self-directed and constructive way [3]. ICT is not only employed as an instrument, which can be added for existing teaching methods but also seen as an important instrument to support new ways of teaching-learning process. ICT is being integrated into the teaching-learning process in various educational institutions in Nigeria and the world in general.

Even though ICT is somewhat new phenomenon in Nigeria, the use of computers is applied in many areas of human activities, such as medicine, domestic activities, engineering, architecture, and education. It is crucial to investigate how the use of ICT is reflected in the secondary school programs. However, ICT in the educational sector calls for all the stakeholders in the education to be computer literate, if the schools are to survive with the challenges in the society. For the schools to be effective, computer literacy should be established through computer availability, computer utilization, and content competencies in the schools, as

well as through teachers' effectiveness in the areas of teaching and learning, record keeping, supporting student academic performance, teachers job performance, school discipline and community services.

This research attempts to investigate the level of awareness on ICT among secondary school teachers. It focuses on the secondary school teachers in Nigerian context specifically Sokoto metropolis. A sample of four hundred (400) questionnaires was distributed to selected secondary school teachers of which 365 copies of the questionnaires were duly answered and returned by the respondents. Hence, these data were analyzed using simple frequencies, percentages and chi-square methods.

Background and Literature Survey

Information and Communications Technology (ICT) is often used as a complete synonym for Information Technology (IT). But is a more special term that stresses the role of unified communications and the integration of telecommunication (telephone lines and wireless signals), computers and necessary enterprise software, middle ware, storage, and audio-visual systems, which allow users to access, store, transmit, and manipulate information. Academic researchers had used the expression ICT since the 1980s, but it became well-known after Dennis Stevenson used it in a report to UK government in 1997 and in the revised National curriculum for England, Whales, and Northern Ireland in 2000.

ICT is a computer-based system for information transmission, reception, processing and retrieval which has drastically changed the way we think, the way we live and the environment in which we live [4]. It can be used to access global knowledge and communication with other people [4]. Students that make usage ICTs gain deeper understanding of complex topics and concepts, and are more likely to remember information and use it to solve problems outside the class environment [5]. In addition, students extend and deepen their knowledge, investigation, and inquiry through ICT according to needs and interest when access to information is available on multiple levels.

A lot of researches have been conducted on ICT. Adebowale and Dare [6] investigate the level of awareness of primary and secondary school teachers of

Oyo state invited for a capacity building workshop of Nigeria's educational policy on ICT as well as its possible influence on the use of ICT for classroom teaching and learning. Data collection was done using a self-constructed and validated questionnaire titled: "Teachers awareness of Nigeria's educational policy on ICT". The data was analyzed using simple percentage, t-test and ANOVA. This study found that only a small percentage of the respondents possess a high level of awareness of the country's educational policy on ICT.

Also, Obakhume [7] assess secondary school teachers' use of ICT in Oyo metropolis of Oyo state. This study examines the availability and usability of Information and communication technology among secondary school teachers in Oyo Metropolis. The Research Design employed is the descriptive survey design. Data collected were analyzed using frequency tables and simple percentage. Results of the study showed that ICT facilities are not available in most of the schools covered. It was also observed most teachers used as the sample for the study, are not competent in the use of ICT.

Another study is conducted by Mingaine [8] to investigate skills challenges in adoption and use ICT in public secondary school, Kenya. The study explored teachers' skills that influenced the process of adoption and use of ICT in public secondary schools. It adopted a descriptive survey research design. Data collected was analyzed by use of descriptive and inferential statistical techniques after which results were presented in tables. The study findings established that there was limited supply of qualified ICT teachers in Kenya.

In addition, Badau and Sakiyo [9] conducted a study by assessing the competence of ICT of rural and urban secondary school ICT teachers for the implementation of ICT curriculum in North Eastern Nigeria. Data was analyzed through grand mean, standard deviation and percentage. Results reveal that the competence of ICT teachers on policy, curriculum, pedagogy, technology, administration and professional development is low. Obstacles to ICT teachers competences were identified as lack of hardware, software, and financial resources, lack of electricity in most rural schools and insufficient information and experience from teachers in ICT applications.

Further, Ndibalema [10] conducted a research on teachers' attitudes towards the use of ICT as a pedagogical tool in secondary schools in Tanzania, taking Kondoa District as the case study. The data collection methods involved questionnaire and interview. This study adopted the mixed method approach which considers both quantitative and qualitative as the methodological solutions. It was found that teachers have positive attitudes towards the use of ICT as a pedagogical tool but they did not integrate it in their teaching effectively. Also, low familiarity with ICT usage as a pedagogical tool among teachers was found to be a problem.

II. METHODS AND MATERIAL

Research Design

Taking into Cognicase the research population and topic, descriptive otherwise known as survey research design is adopted. The survey research design enable data to be collected through the use of questionnaires and interview at a point in time without subjecting the variables to any manipulation, control, or experimentation.

The research design was adopted in order to generate enough data to answer the research questions. The research is also designed such that the data collected can easily be quantified, so that it could be reported quantitatively.

Population of the Research

This research comprises some public and private secondary school teachers within Sokoto state Metropolis as its population.

Sample and Sampling Techniques

In undertaking this research, a sample of four hundred (400) questionnaires was distributed to selected secondary school teachers. However, in order to offer an equal opportunity of the entire population stratified random sampling will be used. This will provide an opportunity to choose the teachers that will give a true representation of the population.

Instruments

Questionnaire is used in this research as instruments for collection of data. In this category of research, the usage of questionnaire is necessary since it gives the respondents freedom and greater opportunity to convey themselves with regard to the questions asked. A set of questions are setup to generate data to answer the research questions and problems.

Method of Data Analysis

After data has been collected using questionnaire, it is going to be analyzed using simple frequencies, percentages and chi-square methods.

III. RESULT AND DISCUSSION

Four hundred (400) copies of questionnaires was distributed for this research of which 365 copies of the questionnaires were duly answered and returned by the respondents. Hence, these data were analyzed and presented using tabular, percentage and chi-square methods for easy understanding.

Table 4.1: Sex of the Respondents

Sex	Respondents	Percentage (%)
Male	158	43
Female	207	57
Total	**365**	**100**

Source: *Questionnaire administered 2015*

From table 4.1, it has been observed that 43% of the total respondents are males while the remaining 57% are females. The analysis shows that most of the respondents are females considering the distribution of the sex as shown by the analysis.

Table 4.2: Age Distribution of the Respondents

Age	Responses	Percentage (%)
20-29	105	29
30-39	177	49
40-49	71	19
50 and Above	12	3
Total	**365**	**100**

Source: *Questionnaire administered 2015*

Table 4.2 shows that the majority of the respondents fall between the ages of 30-39 representing 49%, which constituted that most of the respondents are middle-aged people.

Table 4.3: Qualification of the Respondents

Qualification	Responses	Percentage (%)
NCE	101	28
OND	6	1
HND	36	10
B.ED	81	22
B.SC	61	18
B.SC.ED	56	15
M.SC	9	2
M.ED	5	1
B.A	10	3
Total	**365**	**100**

Source: *Questionnaire administered 2015*

Table 4.3 analyses: 28% of the total population representing 101 respondents are NCE holders, 1% of the total population representing 6 respondents are OND holders, 10% of the total population representing 36 respondents are HND holders, 22% of the total population representing 31 respondents are B. Ed holders, 18% of the total population representing 61 respondents are B. Sc holders, 15% of the total population representing 56 respondents are B.Sc.Ed holders, 2% of the total population representing 9 respondents are M. Sc holders, 1% of the total population representing 5 respondents are M. Ed holders, and 3% of the total population representing 10 respondents are B.A holders. This is clear evident that the highest qualification among the respondents is NCE holders followed by B.Ed holders.

Table 4.4: Teaching Experience of the Respondents

Week/Months/Years	Responses	Percentage (%)
6 Weeks	11	3
4 Months	7	2
1-5 Years	140	38
6-10 Years	134	37
11-15 years	48	12
16-20 Years	16	4
21-25 Years	5	1
26-30 Years	2	1
31-35 Years	1	1

36-40 Years	1	1
Total	**365**	**100**

Source: *Questionnaire administered 2015*

Table 4.4 indicated that the majority of the respondents to the questionnaire have teaching experience of 1-5 years, which constituted 38% out of the total population.

Table 4.5: Have you ever heard of IT before?

Responses	Respondents	Percentage (%)
Yes	340	93
No	25	7
Total	**365**	**100**

Source: *Questionnaire administered 2015*

Table 4.5 indicates that 340 of the respondents (93%) have heard of IT before, while 25 respondents (7%) never heard about IT. This have clearly shows that the level of IT penetrating among teachers is growing rapidly.

Table 4.6: If YES to the above question, how did you hear about it?

Responses	Respondents	Percentage (%)
Media	89	24
School	199	**55**
Friend	33	9
Books	29	8
Others	15	4
Total	**365**	**100**

Source: *Questionnaire administered 2015*

Table 4.6 indicates that out of the total respondents; 28% heard about IT on Media, 55% heard about IT from School, 9% heard about it from friends, 8% heard about it from Books and 4% heard about IT from other sources.

These shows that majority of the respondents heard about IT from school, meaning that they are thought about IT during their schooling.

Table 4.7: Do you know what ICT means?

Responses	Respondents	Percentage (%)
Yes	320	88
No	45	12
Total	**365**	**100**

Source: *Questionnaire administered 2015*

On response to the question "Do you know what ICT means", majority of the respondents know what ICT means by 88%.

Table 4.8: Do you have IT facilities in your school?

Responses	Respondents	Percentage (%)
Yes	243	67
No	122	33
Total	365	100

Source: *Questionnaire administered 2015*

On the responses to the question on the table 4.8, 67% answered Yes that they have ICT facilities in their schools, while the remaining 33% answered No, they don't have ICT facilities in their schools. Therefore, majority of the respondent have ICT facilities in their schools.

Table 4.9: Do you use any of the facilities in teaching learning process?

Responses	Respondents	Percentage (%)
Yes	172	47
No	193	53
Total	**365**	**100**

Source: *Questionnaire administered 2015*

On the response to question on the table 4.9, 47% answered Yes, that they use ICT facilities in teaching/learning processes, while 53% answered No, they do not use ICT facilities in teaching/learning processes. Therefore high percentages of the respondents are not using of the available ICT facilities in their schools.

Table 4.10: Have you received any form of training on how to use IT facilities?

Responses	Respondents	Percentage (%)
Yes	206	56
No	159	44
Total	**365**	**100**

Source: *Questionnaire administered 2015*

On response to the question on table 4.10, 56% answered Yes, they have received some sort of training for IT, while 44% answered No, they have not received any form training for IT facilities. So, conduct of training is fair because the difference between trained and untrained teachers is negligible.

Hypothesis Testing

This section test the tentative questions and answers set earlier in the introductory section, with aim of examining the validity and accuracy of the set hypothesis for informed decision making thereof.

Responses from table 4.7 is used to analyze the above hypotheses

Responses	Yes	No	Row Total
Yes	320	0	320
No	0	45	45
Total	**320**	**45**	**365**

Source: *Questionnaire administered 2015*

To test the above hypothesis, use the formula:
$$X^2 = \Sigma \frac{o-E}{E}$$
Where,

0 = Observed frequency or data
E = Expected frequency or data
Σ = Addition/Summary Sign

Therefore, $E = \frac{RT X CT}{GT}$

Where,
RT = Row Total
CT = Column Total
GT = Grand Total

Therefore,

$$\frac{320 \, X \, 320}{365} = \frac{102,500}{365} = 280$$

Table 4.11: Chi-Square Computation

Observed	Expected	0 − E	(0 − E)²	(0 − $\frac{}{E}$
320	280	40	1600	5.7
0	40	-40	1600	40
0	40	-40	1600	40
45	5	40	1600	320
		0		Σx^2 = 405.7

Source: *Computation by the Researcher 2015*

The degree of freedom = D.f. = (r − 1) (c − 1)
= (5 − 1) (5 − 1)
= 4 x 4
D. f= 16

Level of significance ∞ = 0.5 (5%)

From the above computation, X^2 calculated is 405.7 while the critical table (X^2 tabulated) at d. f. and at 5% level of significance is 26.296.

Decision Rule

Since the X^2 calculated 405.7 is greater than the value of X^2 tabulated from the critical table which is 26.296 at d. f. and at 5% level of significance, the we reject the null hypothesis (H0) and accept alternative hypothesis that majority of the respondents knows the meaning of ICT and what it stands for.

Hypothesis Two

H0:   Never heard of IT before.
The responses from table 4.5 below are used to analysed and test the above hypothesis.

Responses	Yes	No	Row Total
Yes	340	0	340
No	0	25	25
Total	340	25	365

Source: *Questionnaire administered 2015*

Also to test the above hypothesis, use the formula:

$X^2 = \sum \frac{o-E}{E}$

Where,
0   =   Observed frequency or data
E   =   Expected frequency or data
$\sum$ =   Addition/Summary Sign

Therefore, $E = \frac{RT \, X \, CT}{GT}$

Where,
RT =   Row Total
CT =   Column Total
GT =   Grand Total

Therefore,

$\frac{340 \, X \, 340}{365} = \frac{115,600}{365} = 317$

Table 4.12: Chi-square Computation

Observed	Expected	0 − E	(0 − E)2	$\frac{(0-E)^2}{E}$
340	317	23	529	1.6
0	23	-23	529	23
0	23	-23	529	23
25	2	23	529	264.5
		0		$\sum x^2 = 312.1$

Source: *Computation by the Researcher 2015*

The degree of freedom = d. f. = (r − 1) (c − 1)
= (2 − 1) (2 − 1)
= 1 x 1
D. f. = 1

Level of significance ∞ = 0.5 (5%)
From the above computation, X^2 calculated is 312.1 while the critical table (X^2 tabulated) at d. f. and at 5% level of significance is 3.841.

Decision Rule

Since the X^2 calculated 312.1 is greater than the value of X^2 tabulated from the critical table which is 3.841 at d. f. and at 5% level of significance, the researcher reject the null hypothesis (H0) and accept alternative hypothesis that the respondent have heard about IT before.

IV. CONCLUSION AND RECOMMENDATION

Even though ICT is somewhat new phenomenon in Nigeria, the use of computers is reflected in many areas of human activities, such as medicine, domestic activities, engineering, architecture, and education. It is crucial to investigate how the use of ICT is reflected in the secondary school programs. However, ICT in the educational sector calls for all the stakeholders in the education to be computer literate, if the schools are to survive with the challenges in the society. For the schools to be effective, computer literacy should be demonstrated through computer availability, computer utilization, and content competencies in the schools, as well as through teachers' effectiveness in the areas of record keeping, supporting student academic performance, teachers job performance, school discipline and community services.

In conclusion, this research has shown that level ICT penetrating Sokoto state secondary school teachers is growing rapidly. Also majority of secondary schools have ICT facilities. But the level of ICT training to teachers is fair because the difference between trained teachers and untrained teachers is negligible. In addition,

very few numbers of teachers are not using ICT facilities in teaching and learning. This is identified to be attributed to lack of proper training on how to use the available ICT facilities and constant power supply.

It is recommended that proper training should be continuously given to all staff in all levels on how to use the available ICT facilities. Furthermore, constant power supply should be provided to enable teachers to use these ICT facilities any time required.

In addition, Government, Companies, Religious groups, NGOs, Social organizations, PTAs etc, should provide the required ICT infrastructure in schools. Teachers should be trained on the use of ICT resources for subject teaching and learning particularly the use of different software packages, CDs, CD ROMs, video tapes on science concepts and processes etc. Computer literacy program should be provided for both pre-service and in service teachers and full integration of ICT resources into education program at teacher preparatory level should be ensured.

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