EVALUATION OF SCIENCE TEACHERS' LITERACY ON INFORMATION AND COMMUNICATION TECHNOLOGY IN GOVERNMENT SECONDARY SCHOOLS IN AWKA EDUCATION ZONE

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ABSTRACT

The study evaluated the level of literacy of Secondary School Science Teachers on Information and Communication Technology (ICT) in Awka Education zone. Three research questions and two hypotheses guided the study. The sample consisted of 150 science teachers selected from some schools by random sampling. The design was survey and the instrument was questionnaire that was structured on a 5 point rating scale. Analysis of data using mean and standard deviation were used for the research questions, while t-test was used to text the null hypotheses. Results showed that science teachers are minimally aware of the instructional values of ICT, location and qualification did not influence the use of ICT facilities. Based on the findings, recommendations were made that secondary school science teachers should be trained and the awareness of the values of ICT created, to enhance learning and promote students performance.

INTRODUCTION

Education is a vital and indispensable key to any form of development, human, social or national. The Federal Government through the National policy on Education (2004), adopted education as an instrument for change and development for both individual and nation. For this; teachers as indispensable tools should have knowledge of the Information Communication Technology (ICT) so that the goals and challenges of present education will be met.

The world is becoming a global village and ICT is becoming a success factor in what people do. As globalization gains momentum, boundaries, geographical and mental are becoming irrelevant. Experts had highlighted the need for Nigerian science teachers and other workers to acquire knowledge in Information and Communication Technology (ICT) to realize their career aspiration. Akudolu (2000) states that Information and Communication Technology (ICT) refers to all kinds of electronic system that are used for broadcasting; telecommunication and all forms of computer mediated communications. The impact of ICT is becoming more and more pronounced worldwide such that rarely is any thing mentioned in any area of human endeavor without reference to the computer technology.

Ajagun (2003) opines that ICT includes the radio, television, videos, computers e-mail, sensors and satellite connections. Internet and all software and materials employed by teachers for teaching and learning. Aneke (2005), states that Information and Communication Technology is used in education more or less explicitly in examining technological possibilities in facilitating social interaction between teachers and students and amongst students.

The different methods of computer used in education are:
1. Computer Aided/Assisted Instruction (CAI)
2. Computer Managed Instruction (CMI)
3. Computer Based Education (CBE)

Computer is thus one of the most important ICT facility that secondary school science teachers must be aware of its instructional values and use to promote education in general. Equally, the internet is part of this technology.

Nwosu (2002), stated that the internet is an abbreviation for International Network for communication. It is a world wide computer network which links millions of computer users by standard telecommunication lines. Tealer and Gray (2002), referred to it as cyber space, an electronic library and the digital revolution. The Internet was founded in 1960 by U.S defence department. It has opened up opportunities for finding out information, e-commerce and fun. Others are e-mail, World Wide Web (www), satellite, Teleconferencing, Database, Telephone etc. The application of various ICT facilities such as internet, computer, www, e-mail, video conferencing to teaching and learning situations in the classroom has been assumed worthwhile especially at this time of knowledge and population explosion.

Unfortunately, in Nigeria most teachers are using the old method of talk and chalk even in the teaching of science. As the teachers are the chief curriculum implementers, they need to know how to use the various ICT facilities. The problem of this study is that there is massive show of teachers not having idea or knowledge of ICT which led Government to invite private computer companies to teach the secondary school students computer education..

Purpose of Study
The purpose of this study is to evaluate science teachers literacy on the instructional values of ICT facilities; identify whether the science teachers make use of ICT facilities such as computer in teaching various science subjects and equally find out whether the science teachers' knowledge of ICT would be based on their qualification.

Significance of Study
It is hoped that the study would be of great significance to teachers, pupils, educators, curriculum planners in the sense that if the study shows a negative result, it will be fully incorporated in the curriculum and teachers be made to maximally utilize ICT in their daily teaching.

Scope of Study
The study is limited to Government Secondary Schools in Awka Education zone.

Research Questions
To guide the study, these questions were raised:
- What is the level of science teacher's awareness on the instructional value of ICT facilities in teaching?
- Do science teachers' knowledge of ICT vary based on their qualifications.

- How frequently do science teachers use these ICT facilities in teaching their subjects.

Hypotheses

H_{01}: There is no significant difference in the mean response of teachers in urban and rural schools on the knowledge of the instructional values ICT facilities in teaching.

H_{02}: There is no significant difference in the mean response of graduate and NCE science teachers on the use of ICT in teaching.

METHODOLOGY

The study is a survey, aimed at evaluating the literacy of science teachers on Information and Communication Technology, (ICT). This design is the plan, structure and the strategy of investigation conceived so as to obtain answer to research questions and control variance. It is concerned with making decisions or judgments relating to the worth of an educational tool; material methods and programmme based on empirical data.

The study was carried out in government owned secondary schools in Awka education zone in Anambra state. The population comprised of all male and Females science teachers in 64 government owned secondary schools in Awka education zone. The sample comprised of 150 science teachers in this area. The 150 science teachers includes 95 teachers in urban and 55 teachers in rural schools of Awka education zone.

The instrument was validated by experts who were requested to critically examine and review the items for content and relation to objectives of the study.

The items in the questionnaire were structured on a five rating scale format as follows:

Very much aware	5	Very frequently	5
Much aware	4	Frequently	4
Fairly aware	3	Occasionally	3
Aware	2	Rarely	2
Not aware	1	Never	1

The Mean and standard deviation were used to answer the research questions. The mean score of 3.00 was fixed as the acceptance point and any mean below 3.00 was rejected. The T-test was used for testing the null hypothesis at 0.05 level of significance.

Research Question 1: What is the level of science teacher's awareness on the values of ICT facilities in teaching?

Table I:- Mean scores of teachers Awareness

S/N	ICT Facilities	Mean	SD	Remarks	
1.	Internet	1.85	0.36	NA	
2.	Computer	3.66	1.43	FA	**NA = Not Aware**
3.	E-mail	2.48	0.66	A	**FA = Fairly Aware**
4.	Video	3.98	1.71	FA	**A = Aware**
5.	Television	3.58	1.14	FA	
6.	Radio Player	2.65	0.75	A	
7.	Others (Play cards	2.72	0.79	A	

Table I: Shows that secondary School teachers are not aware of Internet facilities; since their score is below mean, they are fairly aware of computer, video, radio and others (play

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cards). The teachers are not adequately aware of most current ICT facilities but only old ICT facilities like radio; video.

Research Question 2:-How frequently do science teachers make use of these ICT facilities in teaching their subjects?

Table 2:- Mean Scores and Standard Deviation on the Frequency of Use of ICT Facilities by the Science Teachers

S/N	ICT Facilities	Mean	SD	Remarks	
1.	Internet	1.65	0.28	N	
2.	Computer	2.66	0.75	R	
3.	E-mail	1.79	0.34	N	N=Never
4.	Video	3.45	1.27	OCC	R=Rarely
5.	Television	3.52	1.34	OCC	Occ=occasionally
6.	Radio Player	2.52	0.68	R	
7.	Others (Play cards	2.19	0.51	R	

According to this table, the most frequently ICT facilities used by teachers are video and televisions with the mean score of 3.45 and 3.52 respectively. Computer, video and others like play cards are rarely used with the mean scores of 2.66, 2.52 and 2.19. The Internet and E-mail are never used by teachers in teaching. So teacher do not make use of Internet as they do not know about it themselves.

Research Question 3:- Do science teachers knowledge of ICT vary based on their qualifications?

Table 3:-Mean Scores and Standard Deviation of University Graduates Teachers and NCE Teachers awareness of ICT

S/N	ICT Facilities	GRADUATE TEACHERS			NCE TEACHERS		
		Mean	SD	Remarks	Mean	SD	Remarks
1.	Internet	1.60	0.312	NA	0.25	0.04	NA
2.	Computer	3.172	1.239	FA	0.488	0.19	NA
3.	E-mail	2.149	0.572	A	0.331	0.09	NA
4.	Video	3.44	1.482	FA	0.54	0.23	NA
5.	Television	3.102	1.988	FA	0.478	0.152	NA
6.	Radio Player	2.296	0.650	A	0.354	0.10	NA
7.	Others (Play cards	2.357	0.634	A	0.37	0.106	NA

Key Notes: - NA = Not aware; FA= fairly aware; A =Aware From table 3, it can be seen that graduate teachers are fairly aware of some ICT facilities like computer, video television; and aware of e-mail and radio and they are not aware of internet while the NCE teachers are not aware of such ICT facilities

Null Hypotheses

Ho$_1$: There is no significant difference in the mean response of teachers in the urban and rural schools on the level of knowledge of the instructional values of ICT facilities in teaching.

HO$_2$ There is no significant difference in the mean response of graduate teachers and N.C.E teachers on the use of ICT in teaching.

Table 4 : t- Test Analysis for the Mean Difference between URBAN and Rural Dwellers based Teacher's Level of Awareness of the Instructional Value of ICT Facilities

Respondents	No of Teaches	X	SD	DF	t-Calculated	t-Critical	Probability
Rural	55	4.48	1.26	148	0.0535	1.98	0.05
Urban	95	2.20	2.08				

From the above t-test, table the t- calculated of 0.0535 is less than the t-critical of 1.98 at 0.05 level of significance and 148 degree of freedom. The decision was to retain the null hypothesis.

Table 5: t- Test Analysis for the Mean Differences in the use of ICT Facilities by University Graduate and NCE Science Teachers

Respondents	No of Teaches	X	SD	DF	t-Calculated	t-Critical	Probability
Graduates	110	2.60	0.51	1.48	0.0535	1.98	0.05
N.C.E	40	2.99	0.78				

From the table 5, the t critical of 1.98 is greater than t-calculated value of 0.035 at 0.05 level of significance and 148 degree of freedom. Therefore the decision was to retain the null hypothesis. This in effect means that there is no significant difference between the frequencies of the use of the ICT facilities by teachers based on their qualification.

DISCUSSION OF FINDINGS; CONCLUSION AND RECOMMENDATIONS

Result shows that, teachers are minimally aware of the instructional value ICT facilities. This is in line with Ofoefuna (2005) who said that unfortunately, in Nigerian most teachers are still using the method of talk and chalk, even in teaching of sciences especially physics, chemistry, mathematics and biology. This cannot prepare the youths for the emergent of technological growth, which is dominated by ICT in all spheres of living as individuals and as a group.

Anosike (2003) agreed that the use of ICT facilities in instruction would enhance learning and ensure transfer of knowledge. In effect ICT facilities if used appropriately enhance presentation of new ideas simulation of discoveries and challenging thinking. Teachers in both urban and rural secondary school have no significant difference in their level of awareness on the instructional values of ICT facilities

Teachers' use of ICT facilities was not significantly dependent on teaching qualification and most ICT facilities were not frequently used by teachers. Thus table 3 showed that teachers knowledge of ICT does not vary based on their qualification. Omenke (2007) stated that many teachers are not computer literate hence cannot operate on the computer and feel reluctant in embracing computer education. The fact that science

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teachers are not aware of the vital roles of ICT facilities for instruction mean that they still use old method of teaching and this may not enhance much learning in the positive direction especially in this computer age.

Based on these findings, these recommendations are made:-
1. In service training on ICT, workshops and seminars should be provided for all science teachers and made compulsory.
2. The teachers should all be provided with computers and the amount deducted instalmentally from their salary.

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