

## Acquiring Scientific Literacy via E-Learning in Secondary Schools in Ekiti-State, Nigeria

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### Abstract

The acquisition of scientific literacy via e-learning is an integral part of digital literacy. But the level of awareness and usage of e-learning in Nigeria seems very low and require investigation. On this basis, this survey research was out to investigate how some secondary school students in a part of Nigeria are exposed to scientific instructions using e-learning facilities and also to determine the availability or otherwise of e-learning facilities in Nigerian schools. Four research questions were raised to elicit information from respondents about the usefulness of internet facilities on learners' acquisition of effective scientific skills needed to communicate intelligently in the scientific community. One hundred secondary school students and twenty science teachers participated as research subjects. A 20 item questionnaire validated with a reliability co-efficient of 0.78 was used as the research instrument. Descriptive analysis of Frequency counts and percentage were used to analyze the data collected for the study. The result showed that the internet has been of tremendous assistance to students, who are privileged to have access to internet facilities, in carrying out instructional objectives. It was therefore recommended that internet facilities should be provided for learners in every school in Nigeria to facilitate scientific instructions. This recommendation will help in enhancing the literacy level of Nigerian students through e-learning

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**Keywords:** ICT, scientific literacy, e-learning, microcomputers, electronic gadgets..

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### INTRODUCTION

The prospects of Information Communication Technology (ICT) in today's world have made it seem inevitable. Over the last few decades, series of educational reform in Nigeria has given opportunities for the acquisition of scientific literacy via e-learning because of its potentials and global acceptance. Available literature such as Mbakwem (2008), Olibie and Akindolu (2009) specified that Nigerian students are aware of the empowering potentials of digital technology. Besides, they further stressed that it is not just about acquiring basic ICT skills like the use of Cell phones, electronic mail (e-mail), word processing alone. It also requires improving students' capabilities in using ICT to receive and produce information and learning new ways of interacting intelligently in the civic life of the current information society. The study therefore examines how and how well Nigerian students acquire scientific literacy via e-learning. E-learning is a global phenomenon which a country like Nigeria should not shy away from.

The learning content acquired using electronic technology is e-learning. The inculcation is to provide enabling environment that encourages individualized learning of competences in software. These include spread sheet, data base, and analysis of data through statistical packages that allows the learners to interact with the computer freely. It also

provide students with practical and functional knowledge of the computer, the internet and other associated gadgets that will have positive effect on their later experiences, FGN (2001).

Technological revolutions of today are experienced with the increase use of computer and internet. It is expedient that it should work into the school curriculum. French, (1996) stated that include method, management and that are employed in the creation, storage, manipulation and communication of the information. Access to ICT by secondary school students helps them to download academic information that may not be readily available in their textbooks or schools libraries. E-learning holds a great deal of potentials for increasing students' educational opportunities.

The relationship between ICT and education seems enormous; this has clearly been demonstrated by the quality and sophistication of information system in the developed countries of the world. For instance, students from the lowest grade level have access to ICT gadgets starting from computer games to the most complex electronic gadgets. These they use to collect educational information that affects their lives or influences their decision. Abinbade, (2003) observed that the use of microcomputers in the United Kingdom (UK) has made it easier for the teachers to emphasize the practical application of

mathematics particularly than over. Other researchers such as (Jegede, Okebukola and Ajewole 1991, 1992) advocated E-learning stressing how the use of microcomputers can promote more active and effective learning in Biology. Ross (1991) also noted that the computer based instruction promotes more individualized learning, increased students' motivation and was varied sensory and conceptual modes in social studies.

It is evident that available modes in social studies. it is evident that available literature succinctly put in that students would learn more if they are engaged in significant and appealing activities involving computer assisted programs it is important to note however that many young ones in the developing countries are exploiting ICT usage negatively. Many adolescents when learning how to surf the web pitch their interest in accessing irrelevant information. It is common experience to observe that young people make use of their personal computers, cellphones and tablets or gather in cyber cafes to access pornographic websites and engaged in fraudulent (yahoo yahoo) activities.

It is disheartening to note that ICT usage has this threatening limitation. As a preventive measure to the problem posed by the negative influence the young Nigerian can be exposed to formal ICT education via introducing holistic curriculum package for e-learning in schools is imperative. Against the background of the merits of the e-learning in secondary education, this study investigated how secondary schools in Ekiti state of Nigeria acquire scientific literacy via e-learning.

**RESEARCH QUESTIONS**

1. To what extent are the teachers using ICT to facilitate scientific instructions?
2. What is the disposition of science students towards acquiring scientific literacy via e-learning?
3. To what extent has the educational system adopted and integrated ICT to facilitate instruction?
4. Is there any gender disparity in students' disposition toward learning science via e-learning?

**MATERIAL AND METHOD**

The research design used was a descriptive survey type where the population for the study was made of all Senior Secondary School (SSS) II students. A sample of 4 science teachers per school making a total of 20 teachers and 100 science students, equal number of male and female students, was drawn from 5 Senior Secondary School in Ado-Ekiti, Ekiti State, Nigeria. Twenty students consisting of 10 males and 10 females were randomly selected from each of the five sampled schools.

**Instrument:** A researcher-made 20 item questionnaire drawn on the usefulness of ICT for acquisition of scientific skill was used to elicit information from the research respondents. Split half method of reliability test was used to determine the internal consistency of the items on the questionnaire. A reliability co-efficient of  $r = 0.78$  was obtained which has considered high enough before the actual usage of the instrument for the study.

The instrument was administered on the research respondents and the data collected was analyzed using frequency counts, percentage

**RESULTS**

**Research question 1:** To what extent are the teachers using ICT to facilitate scientific instructions?

Table 1.0: Percentage analysis of usage of ICT by science teachers

Variable	N	%
Frequently used	8	40.0
Sparingly used	7	35.0
Not used	5	25.0
Total	20	100.0

Table 1.0 showed that 40.0% of Nigerian secondary school teacher use ICT facilities often while 35.0% of the sampled teachers use ICT facilities but sparingly. In summary, the result showed that 75.0% of the teachers use ICT to teach.

**Research Question 2:** what is the disposition of science students towards acquiring scientific literacy via e-learning?

Table 2.0: Disposition of science student towards e-learning

Variable	N	%
Favourably disposed	72	72.0
Not favourably disposed	27	27.0
Neutral	1	1.0
Total	100	100.0

Table 2.0 revealed that 72.0% of the respondents are favourably disposed to the use of e-learning in the teaching of science subjects while 27.0% showed no interest in the use of e-learning.

**Research Question 3:** what is the ratio of ICT facilities to students' proportion?

Table 3.0: Ratio of ICT facilities on students in Nigerian schools

Facilities per school	No	Average no of students per school	Ratio
Computer sets	20	45	4:9
Electronic room	1	45	1:45
Internet access point	20	45	4:9

Table 3.0 revealed that on average, the available ICT facilities in Nigerian Secondary Schools are not

adequate. The ratio of ICT facilities to average number of students per class was 4:9 where it is expected to be 1:1 or 1:2

**Research Question 4:** to what level has ICT assisted Nigeria students in their learning?

Table 4.0: Level of ICT assistance to Nigerian students

Level of assistance	Teachers response	Students response
High	14 (70)	76 (76)
Moderate	5 (25)	20 (20)
Low	1 (5)	4 (4)
Total	20 (100)	100 (100)

Table 4.0 showed that 70% of the science teachers and 76% of the science students sampled agreed that ICT had highly assisted the Nigerian students in the teaching and learning of science subjects where the ICT materials are available. While 25% of the teachers and 20% of the students sampled believed that ICT had moderately assisted them.

**DISCUSSION**

It was revealed from the findings that 75.0% of Nigerian secondary school teacher use ICT facilities at one time or the other to teach. This negates the findings of Rahman (2002) who claimed that developing countries are ignorant of ICT usage. The findings showed further that 72.0% of the students sampled are favourably disposed to the use of e-learning in the teaching of science subjects while 27.0% showed no interest in the use of e-learning. The finding was in support of Ross (1991) who observed that Social Studies students has a favourable disposition to the use of ICT.

It was revealed from the findings that the available ICT facilities in Nigerian Secondary Schools are not adequate. The ratio of ICT facilities to average number of students per class was found to be 4:9. This was early observed by Ajayi and Popoola (2010). 70% of the science teachers and 76% of the science students sampled agreed that ICT had highly assisted the Nigerian students in the teaching and learning of science subjects.

**CONCLUSION AND RECOMMENDATIONS**

ICT awareness among Nigerian Secondary School Students is very high but the facilities are not readily available to students. Base on the findings, it was therefore recommended that internet facilities should be provided for learners in every school to facilitate scientific instructions. Also all science teachers should be motivated to fully embrace the use of ICT in the teaching of Science Subjects.

**LIMITATION OF THE STUDY**

The study could not cover all the various levels of educational institutions in Nigeria because each level of educational institution has its peculiarities like

maturity level of students, curriculum contents and national education policies that varies from one educational level to another.

**REFERENCES**

Abinbade, A (2003) Providing Information Communication Technology (ICT) environments for teaching and learning in Nigerian educational system. *Education this Millenium: The materials in theory and practice*: Ayodele, Bamiseye O., Nwazuoke I.A. and Okediran E.A Eds Ibadan Macmillian Nigeria Publishers Ltd

Ajayi P O and Popoola A A (2010) Assessment of Information and Communication Technology literacy Level among Nigerian University Students. *International Journal of Pure and Applied Science* 3 (3) 15-18

FGN (2001) Nigeria National Policy for Instruction (IT) Use of Federal Republic of Nigeria. Abuja

French, L.S. (1996) Data processing and Instruction Technology, London: DP Publications

Jegede, O.J, Okebukola P.A.O and Ajewole L.A (1991) Computer and the learning of Biological concepts: Attitude and Achievement of Nigerian Students. *Science Education* 75(6):701-706

Jegede, O.J. Okebukola, P.A.O. and Ajewole L.A (1992). Students' attitude to the use of the computer for learning and achievement in Biological concepts. *Journal of the Science Teachers Association of Nigeria* 27(2): 61-65

Mbakwem, J.N. (2008). Analysis of University undergraduate students and lecturers need for the Information Age: Implication for teaching and learning. In B.G. Nworgu (Ed.) *Education in the Information Age: Global Challenges and Enhancement strategies*. pp. 208-213 Nsukka: University Trust Publishers

Olibie, E.I. and Akudolu, L.I. (2009). Digital Empwerment of students in universities in South Eastern Nigeria *Journal of Educational Review (JER)* 2 (3): 387-393 December 2009

Rahman I. (2002). Strengthening Information Technology Infrastructure in Bangladesh. In M.A.C Akale proceedings of the 43rd Science Teachers Association of Nigeria conference and inaugural conference of CASTME Africa. Ibadan: H.C.B (Nig.) Ltd

Ross E.W (1991) Micro computer use in Secondary school. Social classroom. *Journal of Educational Research* 85(1): 39-46