Assessment of Internet–Assisted Learning Resources (ILAR) in Teaching Chemistry in Senior Secondary Schools in Rivers State, Nigeria

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Abstract *Studies were conducted among secondary school students to assess the effectiveness of internet technology over the conventional method for data or resources generation in chemistry in Orashi zone of Rivers State. Two hundred and seventy (270) students were selected from eighteen (18) secondary schools in the study area, using random sampling techniques. Primary data were collected through questionnaire administration. Quantitative tool used for data analysis was Chi-square (x^2) statistics. The findings from this study revealed that: the generation of chemistry resources using internet system is dependent on the level of awareness of the chemistry students: a greater chemistry resources using internet system is dependent on the level of accessibility of chemistry students to internet services. It is therefore recommended that: The Government should as a matter of policy in-cooperate ICT in secondary school education system, this will enhance computer literacy among teachers and students in Nigeria schools. Internet managed technology for teachers and students should be adequately integrated in the school curriculum for gathering chemistry resources in these highly technological ages.*

Introduction

The computer application and internet technology in Education is a primary concern for educators all over the world (Olele, 2008). An Assessment of the efficacy of internet technology as a formidable information super-high-medium for resources generation in chemistry is an area that attracts greater concern in this area of information revolution (Williams and sawyer, 2001; Huges 1994). According to Ikpe (2005) the internet has created a cooperative society with current information and ideas that form a virtual community stretching from one end of the world to the other. It is imperative that a modern chemistry teachers/students must stay current in order to be relevant in this information age.

Over the years, conventional methods of gathering chemistry resources have presented a difficult terrain for updating information, in addition to scarcity of information (Iji, 2005, Betiku, 2003). However, online libraries with millions of volumes on any topic under the sum present an increasable source of information for chemistry researchers (Ije, 2006, Huges, 1994). The use of a personal computer and modern telephone line quipped with some of the local carriers or internet service providers (INFOWEB, LINK SERVE and THEOBECH) offer an online medium for downloading materials by the subscribers (Ikpe, 2005). Although, some aspects of skills are required for internet users. Its low cost implications and time efficiency involved cyber café a valuable source for updating knowledge in a broad field sciences. It is on this note that this study is conducted to assess the efficacy of internet system as a reliable sources of chemistry resources for students.

Statement of the Problem

Technology has gradually revolutionized the global setting with tremendous positive impacts on modern educational system (Ikpe, 2005). A modern education system must be equipped with the relevant technology

such as internet service to facilitate information generation. Chemistry as a discipline with wide array of subsidiary fields requires a digital-based-approach such as internet services for gathering updated resources. However, some set-backs such as low level of awareness, poor internet services, non-accessibility to internet services, computer illiteracy among others militates against the smooth functioning of this scheme.

Purpose of the Study

The purpose of this study is to:
i) evaluate the level of awareness of chemistry students in the use of Internet to gather resources in the subject area:
ii) determine the total output in chemistry resources generated from internet system as compared to conventional library system:
iii) determine the accessibility of chemistry students to internet services for collection of chemistry resources.

Research Hypotheses

The following hypotheses formulated were tested at 0.05 significance level.
i) There is no significant difference between the level of awareness among chemistry students on internet resources and collection of chemistry information;
ii) There is no significant difference between chemistry students outputs generated from conventional library system and chemistry students outputs generated from internet system:
iii) There is no significant difference between the level of accessibility among chemistry students to internet resources and collection of chemistry information;

Significance of the Study

The results generated from this study will be useful in:
i) creating awareness on the remarkable chemistry resources accruing from the use of internet system.
ii) Mobilizing the government and cooperate bodies to equip the school system with internet services as well as organizing computer training in schools.
iii) Providing based-line information on the benefits of internet system as a source of relevant resources in chemistry.

Research Methodology

Research Design:

Survey research design was adopted for the study. Since information was collected from respondents.

Population of Study:

The entire senior secondary two (ss2) chemistry students in Orashi region of Rivers State constituted the population of the study.

Sample and Sampling Techniques

Simple random sampling techniques were used to select two hundred and seventy (270) students from twenty (20) public senior secondary schools in the study area.

Instrument Used for Data Collection

The instrument used for data collection was a questionnaire. Titled, assessment of internet-assisted learning and resources for teaching (AIALR).

Validity of the Instrument

The questionnaire was faced-and-content validated by experts from Chemistry Education Department FCE(T) Omoku, Nigeria. Useful corrections and recommendations were incorporated into the work as suggested.

Reliability of the Instrument

The reliability of the instrument was determined by test –retest technique. The reliability coefficient is 0.75, which is considered good.

Procedure for Treatment

The questionnaire were administered using students in their respective schools by the researchers. Time was taken to explain the method of response to the students. The questionnaire was partitioned into two parts: section A comprised of personal data of the respondents, while section B composed of twenty four (24) questions covering the purpose of the study. The scoring formats were categorized as follows:
- Students response that falls under upper class: 4(more than 4)
- Students response that falls under middle class: 2(3 – 4)
- Students response that falls under lower class: 1(1-2)

Data analysis was achieved through the use of T – test using the SPSS package.

Results of the Findings

Research Hypothesis 1: there is no significant difference between the level of awareness among chemistry students on internet resources and collection of chemistry information.

Independent Sample T – test

Awareness	N	X	Sd	Df	T	Sig level		Result
Low	45	12.13	1.74	88	-30.71	0.0	00	Rejected
High	45	34.80	4.63					

PZ 0.005

There is a significant difference

The analysis in table 1 indicates that the t – value = -30.71 is significant at 0.000. Mean value of low – level of awareness as 12.13 and high level of awareness is 34.80 with SD of 1.74 and 4.63. The null hypothesis (Ho) of no significant difference between the level of awareness among chemistry students on internet resources and collection of chemistry information is rejected. This result implies that the generation of chemistry resources using internet system is dependent on the level of awareness of the chemistry students.

Research Hypothesis 2: there is no significant difference between chemistry students outputs generated from conventional library system and chemistry students outputs generated from internet system.

Hypothesis 2:

Table 2

System	N	X	Sd	Sd	T	Sig	Result
Library	37	11.51	0.90				
Internet	57	34.74	5.16	88	-27.07	0.000	Rejected

$P< 0.05$
Null hypothesis is reject and the alternate accepted i.e there is a significant difference between……

The analysis in table 2 indicates that t – value is -27.07 significant at 0.000 mean value of library and internet system output of 11.5 and 34.74 and SD 0.90 and 5.16 and Df =88

The null hypothesis (Ho of no significant difference between chemistry student output generated from conventional library system and chemistry student's outputs generated from system is rejected. This result implies that a greater chemistry outputs is generated from the use of internet system.

Research Hypothesis 3: there is no significant difference between the level of accessibility among chemistry students to internet resources and collection of chemistry information.

Hypothesis 3:

Accessibility level	N	X	Sd	Sd	T	Sig	Result
Low	42	11.93	3.44				N5
High	48	35.71	5.50	88	-24.18	0.000	Rejected

The analysis of table 3 indicates that the t-value of -24.18 is significant at 0.000, and the mean value of 11.93 and 35.71 obtained with SD of 3.44 and 5.50 Df is 88.

The null hypothesis (Ho) of no significant difference between the level of accessibility among chemistry students to internet resources and collection of chemistry information is rejected. This result implies that the generation of chemistry resources using internet system is dependent on the level of accessibility of chemistry students to internet services.

Discussion of Findings

The findings which stated that generation of chemistry resources internet system is dependent on the level of awareness among the chemistry students shows that there exists disparities in the level of awareness among Biology students to internet-assisted chemistry resources. This difference may be attributed to disparities in the level of technological advancement among the schools involved as reported by Ikpe (2005). This implies

that the proliferation of microcomputers and other advanced technologies in schools and other areas has contributed significantly to increased level of awareness among some students (Ikpe, 2005; Rees, 2002). While, some areas are yet to be fully integrated to the light of this knowledge explosion as reported by Anderson, (1983) and Kochmen (1995).

The findings that there is significant difference in chemistry students outputs between conventional library system and internet system shows that internet system offers better opportunity for greater richness and topicality of contents, as well as present learner with sophisticated and up-to-date minutes information with examples as stated by Iji, (2002) and Udofia, (2006). Thus, it is possible for the generation of new prospects for understanding complex connection in the subject area (Iji, 2006).

The finding which also stated that the generation of chemistry resources using internet system is dependent on the level of accessibility of chemistry students to internet services, shows that internet system has tremendous potential to enhance accessibility to information quicker, cheaper and easier (Ikpe, 2005, Huges, 1994). This further proves that technology based method of gathering information, is undoubtedly the most effective means of rapidly distributing knowledge and information to the educationally poor and starved communities as reported by Iji (2003).

Conclusion

This study reveals that the generation of chemistry resources using internet system is dependent on the level of awareness of the chemistry students; a greater chemistry output is generated from the use of internet system, the generation of chemistry resources using internet system is dependent on the level of accessibility of chemistry students to internet services.

Recommendations

It is necessary to make the following recommendations based on the findings of the study. The Federal Government should as a matter of policy incorporate information and communication technology (ICT) in the secondary school education system, this will enhanced computer literacy among teachers and students in our schools; computer training for students and teachers should be intensified as well as implementation of computer-based approach as an effective tool for teaching/learning chemistry in schools, particularly in this information and communication technology driven age.

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