



Access and Use of Internet Resources for Learning Among Biology Education Undergraduate Students

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Abstract

This study investigated access and use of internet resources for learning among undergraduate Biology students. Two research questions guided the study. Descriptive survey research design was employed. Population of the study comprised biology education undergraduate students of UNN. Seventy-five, 300 level biology education students were purposely sampled. Instrument for data collection was 'Internet Resources for Teachings and Learning of Biology Concepts Questionnaire' (IRTLBCQ) structured on a four-point rating scale. Research instrument was face-validated by three experts two from Biology unit and one from measurement and evaluation. Reliability coefficient of 0.72 of instrument was established using Cronbach Alpha technique. Research questions were answered using mean and standard deviation. The findings show that students have inadequate access and use of internet resources. This implies that, there are limited access and use of internet resources. The study therefore, recommends provision of adequate internet resources by the University administration for effective science education learning.

Keywords: Access and Use, internet, internet resources, Biology, learning.

Introduction

The internet is a system consisting of interlinked computer networks and data which has developed into an essential tool in the modern information-based society. This has resulted in the shaping of information management, communication, and research (Bankole, 2013). Supporting this view, Ceyhan (2011) noted that the internet provides a range of prospects that expands, improves and change human life. This indicates that it allows unlimited distribution of information and provides a means for collaboration and communication amongst students. Hence Biology education students as sub unit of science Education students are not left out in this technological advancement in teaching and learning process. The antiquity of internet has long been associated with tertiary education. This is because the incorporation of internet resources in the university settings has been proven to increase the access to information and communication through the provision of e-publications (Aminu, 2014). This might not be surprising, as substantial research evidence has confirmed that the advances in information technology and the growth of the Internet have influenced students' approaches to research and learning in this present-day advanced educational milieu. For example, studies have shown that the internet is now a noteworthy tool for modifying human performance (Ogaji, Okoyeukwu, Wanjiku, Osiro, Ogutu & Steyer, 2017).

Internet is a means of communication that connects and transforms the entire world into a global

village where individuals can exchange information from one point of the globe to another. According to Egbiri (2015) internet is an interconnected global network of computers which provides easy and instant communication to users through its numerous resources without geographical limitation. It is the most important vehicle for accelerating the flow of information. Internet utilization for teaching and learning purpose, emanated from the benefits derived from vast information resources shared online such as online journals. The use of internet alleviates the difficulty of understanding Biology concepts by the use of the resources in teaching and learning process. In education, internet resources have now advanced into creating different teaching and learning platform for students and groups interaction (Manasijevec, Zivcovic, Arsic & Milosevic 2016). Some of these teaching and learning platforms are also used as social media such as WhatsApp, Edmodo among others. It is an electronic gateway to learning resources and experiences. On a daily basis, students use the computers to surf the internet for various educational information and activities, to play games, send and receive mails, chat with friends, create or update their own blogs and carry out other activities of interest (Ayogu, 2011). The computer has become not only a means of entertainment but also a veritable instrument of learning for present day student at all ages.

The use of the internet has improved communication among students and between students



and members of staff as well as information sourcing for research purposes. It provides vast depot of information and knowledge that can be applied in teaching, learning and research. As a powerful tool for searching, retrieving and disseminating information with significant impact on almost all professions and as such the internet can be consulted as a reference resource (Ilo&Ifejeh, 2011). The use of the internet in teaching and learning is seen as a means to improve accessibility, efficiency and quality of learning by facilitating access to resources and service as well as remote exchanges and collaboration (Kamba, 2009). The use of internet for education is receiving recognition in Nigeria especially during and post Covid-19 era. This is because of the following needs; to control the spread of the virus; to keep up education from crashing; for institutions to operate distance learning programs and the need to connect academic faculties to global resources for improved teaching and research (Osunade, 2013). The internet provides an array of powerful tools that may help in transforming the present isolated teacher-centered and text-book bound classroom into rich, student focused, interactive knowledge learning environment, referred to as internet resource.

The internet resource refer to various resources in an electronic format that provides information or an indicator of information that are accessible over the internet. Katimani (2010) define internet resources as information found on the net. Parameshwar and Patil (2010) asserted that e-journals, databases technical reports, e-books, reference documents and conference proceedings, electronic magazines, newspaper, books archives and many others are internet resources found on the net. Research has shown that internet based learning add value to learning and improve the quality of learning experience (Yesilyurt (2014) and Ogedebe,(2012). The state of internet resources in teaching and learning in African countries especially Nigeria is minimal compared to other developed countries, because of their vast knowledge and acquisition of technological facilities Ogedegbe (2012). In order to have adequate knowledge of internet resources and successfully implemented in teaching and learning process in Nigeria, there is the need to consider the cost, human capabilities and infrastructure among others (Phiri, Foko, & Mawai, 2014). Unfortunately, most African countries especially Nigeria lack what it takes to access and use internet resources in schools especially tertiary institutions. Facilities such as

computers, power supply and availability of network, to a large extent, have been proven to impact students' research and educational growth (Roudbaraki & Esfidvajani, 2011). This implies that the use of internet resources and technologies for the learning of biology concepts can never be overemphasized (Manasijević, Živković, Arsić& Milošević, 2016).

The study of Biology is not left out in this technological advancement. Biology is the study of life, living things and evolution of life including their structure, function, growth, distribution and taxonomy (Magna 2009). As a field of science, Biology helps us understand the living world and the ways many species functions, evolve and interact. Biology helps to promote economic development, eliminate poverty and introducing social welfare (Nwagbo, 2005). It has indeed contributed to various aspects of human life and to the development of the nations. Notwithstanding the importance and contributions of Biology to human life, students' learning outcome remains poor since Biology contains complex relationships of unfamiliar and abstract concepts, and quite difficult to learn and teach (Ndayambaje, Bikorimana&Nsaganwimana (2021); Agboghoroma and Oyovwi, 2015).

Students often experience difficulty in understanding certain Biology topics and they try to learn them through memorization without understanding the concept. Adebajo and Omoniyi(2018); Apuke and Ezeah(2017) attributed the causes of this poor performance of students towards Biology to many factors, such as non-use and access to internet resource infrastructures in the University and inadequate in supply where available, and most often problems of inexperienced personnel with poor knowledge in the use of internet resources (wireless, networks, internet service provider).

Furthermore, studies by Uwaifo and Azonobi (2014) indicated that some of the problems that militate against the effective use of internet resources for teaching and learning of sciences especially Biology in the Universities include lack of internet facility resources, lack of internet basic skills among teachers students, lack of ICT training & policies (Marshall & Tailor, 2016), inadequate fund and budget for adoption of technologies in schools (Tarimo & Kavishe, 2017) and irregular power supply. Other difficulties include, slow speed of server, High service charge, difficulty in locating needed sites, poor environment, system break down among others (Akambi&Akambi, 2012;



Asogwa&Ezema, 2012; Nwabueze, Nwabueze, &Egbra, 2013;Tayo, Thompson & Thompson, 2015).

Irrespective of the problems militating against the effective use of internet resources for learning of biology concepts, there are strategies that can improve the use of internet resources. The strategies include provision of internet resources as well as a regulatory body that can reduce the cost of internet provision and maintenance to higher institutions and free access to sites. Aboyade and Jubril (2005) asserted that the economic growth of the nation and adequate funding of institutions of higher learning will go a long way in improving students' use of internet resources. Furthermore, Bamigboye and Ojo (2010) opined that university administrations should provide an enabling environment for learning and utilization of internet resources. There should be regular power supply and adequate internet services in the University environment for easy access to the internet. Also, ICT training of lecturers and biology students will help to improve their knowledge on the basic internet skills. Mostofa (2011) stated that orientation programs should be organized by the university at regular intervals so that more staff and students can improve their proficiency in the use of internet resources for academic purposes. These strategies will enhance students' use of internet resources.

However due to the need for proper use of internet resources foreffective teaching and learning of Biology. Many researchers including Apuke and Jibril (2018) studied the use of internet resources for learning and research among Nigerian studying in European University, in Northern Cyprus with the findings that internet delivers a positive impact that enhance emperical research and learning practices in higher education David, (2016); Ogbonna, (2019), Oleleweand Okwor (2017) have studied the importance, availability and factors militating against the effective use o internet resources and learning of computer in some Nigerian secondary schools but none have examined the use and access of internet resources among biology students in the University of Nigeria Nsukka. Hence this study

therefore seeks to investigate the access and use of internet resources among 300 level Biology students of the University of Nigeria Nsukkafor effective science teaching and learning. To achieve this, the study was designed to answer the following questions.

1. What are the mean responses of Biology Education students on the access to internet resources?
2. What are the mean responses of Biology Education students on the use of internet resources in learning process?

Methods

The study adopted descriptive survey research design. The population of the study comprised all the two hundred and seventy eight (278) biology education students of the department of science Education. Purposive sampling technique was used to select seventy- five (75) students of 300 level biology students, the choice was because students at this level have attained formal operational level and not yet at the final level of their studies. The instrument for data collection called "Internet Resource for Teaching and Learning Biology Concept" (IRTLBC) which was developed by the researcher has three sections. The first section consisted of the demographic data of the students. The second section is students' response on access to internet resources, then, the third section comprised student response to the use of internet resources. The instrument was validated by three experts and was further pilot tested on 63 biology education students of Nnamdi Azikiwe University, Awka. Reliability test was conducted using Cronbach alpha which gave a reliability index of 0.72. The data were collected by the two researchers from the students and was used to answer the research questions using mean and standard deviation. A mean score from 2.5 and above was accepted and used, while a mean from 2.4 and below was rejected.

Results

Table 1 shows the mean and standard deviation score of 300 level Biology Education students on the access to internet resources for effective learning process

S/N	Item Statement	Mean	SD	Remark
1.	Access to electronic book, magazines and information	3.72	0.47	Accepted
2.	Access to electronic journals conference documents, electronic thesis and dissertation	2.32	1.64	Rejected

3.	Access to on line coursework, tutorial, patent and tutorial.	2.89	0.62	Accepted
4.	Access to science news, communication, electronic reprint utility and design	3.32	0.58	Accepted

Table 1 showed that items 1, 3 and 4 with mean rating above 2.5 were accepted by 300 level Biology Education students as possible internet resources they have access to during learning. Item 2 with the mean

rating 2.32 was below the benchmark of 2.5 criterion and was thus rejected indicating that students do not have access to electronic journal and conference documents for learning of science.

Table 2: The mean responses of Biology Education students on the use of internet resources for effective learning process.

S/N	Item Statement	Mean	SD	Remark
1.	I use electronic books and magazines on biology learning	3.63	0.49	Accepted
2.	I use electronic journals and conference documents in learning.	3.34	0.48	Accepted
3.	I use online - courseware and tutorials in learning biology concepts	3.60	0.50	Accepted
4.	I often use science news and communication resources in learning biology	3.57	0.70	Accepted
5.	I use electronic books for information updates in Biology.	3.57	0.66	Accepted
6.	I always read electronic thesis and dissertation for more knowledge in Biology	3.46	0.61	Accepted
7.	I use patents and standards to facilitate knowledge transfers among biology students	3.34	0.59	Accepted
8.	I use electronic preprint to search information in Biology	3.17	0.79	Accepted
9.	I use utility, design and plant patents to make abstract Biology concepts real and simple.	3.54	0.56	Accepted

The data presented in Table 2 shows that the mean responses of 300 level Biology Education students ranges from 3.17 to 3.63 and all the items were thus accepted. The mean value of 3.63 for item 1 indicates that internet resources provide relevant Biology materials such as online textbooks to students at low cost, in contrary to hard copies. Item 3 with the mean response of 3.60 indicated adequate acceptance of online courseware and tutorial in learning biology concept. Items 4 and 5 with mean value of 3.57 indicates that internet resources serve as a source solution to students' Biology assignment through the use of search engines and it gives students access to current information in online Biology journals and

articles. The standard deviation which ranged from 0.48 to 0.79 shows that the respondents have similar opinion on the use of internet resources in learning Biology.

Discussion

The findings of the study revealed generally that students can only have access to internet resource when they have computers and laptops. The availability of Information and communication technology is essential in schools at every level, since it is a major prerequisite for accessing internet resources. The internet resources are accessed on the computer using internet browsers installed in the computer. Computerise



one of the most efficacious tools of accessing the internet. Hence the absence of devices such as computers, laptops and other internet providers means no access to internet resources. Hence Hamid, Waycott, Kurnia, Chang (2015) put it that students' access to internet resources is much easier when they have devices that are able to connect the internet at their convenience. Where there is no power supply, accessing the internet becomes impossible thereby limiting effective learning. As Tarimo and Kavishe (2017) posited that for schools, to access the internet means that there should be no shortfall of electricity when the internet is in use during learning. This is so considering that the internet is being surfed on devices that demands electricity. Internet resources are no doubt beneficial to students as well as the effectiveness of teaching and learning Biology concepts. This is consistent with the findings of Nwagbo (2006) and Saka (2006) who reported that internet resources enhance effectual teaching and learning of Biology and improves students self-learning skills of abstract Biology concepts. Furthermore, Nwachukwu and Obi (2019) reported that internet resources avails students the opportunity of getting valid information for doing an efficient assignment.

Conclusion

It can be concluded that students have limited access to internet resources and as a result do not utilize them adequately. Use of internet resources impact significantly on the outcome of Biology Education students learning processes. Thus, there is need for lecturers to adopt the use of internet resources in teaching Biology and also engage students in the use of internet resources for learning Biology concepts.

Therefore, it is recommended that the University authorities in collaboration with the Government should adequately provide internet resources in Nigerian Universities. Also training programs for biology educators as regards utilization of internet resources in teaching Biology concepts should be organized by the University authorities in collaboration with professionals in the field.

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