

Use of Internet Facilities in Learning among Science Education Undergraduates in South Eastern Nigerian Universities

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ABSTRACT— *The research assessed the use of internet facilities in learning by Science Education Undergraduates in South- Eastern Nigerian Universities. Descriptive survey design was adopted which employed a sample of 700 students from Federal and State owned Universities. Questionnaire on Internet Usage (QIU) was used for data collection which was validated and the coefficient of internal consistency was 0.87. Data were analyzed using mean, percentage and t-test. The findings showed that: 57.5% of the University Science Education undergraduates make use of the internet facilities in learning; many ICT skills on internet browsing were not possessed by the students; and male University Science Education students differ significantly in their mean attitude towards internet usage from the female students, male students have more positive attitude than females. The study recommended that University management and lecturers should infuse the internet into education system which would give students more reasons to explore it.*

Keywords— Nigeria, Internet, Gender attitude, Science Education

1. INTRODUCTION

Technology in various forms has always held forth the promise of improving education; this holds true whether in scholastic education or in cooperate and commercial training programs. The various Information and Communication Technology (ICT) facilities used in the teaching and learning process in schools according to Babajide and Bolaji (2003), Bandele (2006), Ofodu (2007), and Yusuf (2010) include: radio, television, computers, internet, slides, digital multimedia, video/VCD machine, etc; but the most prominent in the 21st century is the internet. This is not surprise since technology is said to succeed when it becomes common place. The more accessible information sources are, the more likely they are used, and readers tend to use information sources that require the least effort to access. The internet therefore, no doubt, owes its success to its ability to maintain a 24 hour access to its ease and flexibility of sending, receiving and retrieving information.

The internet according to Yusuf (2010) is an unparallel mechanism for making available to anyone, almost instantly and at near-zero cost, anything that is expressible on apps. It is a communication super-highway that links, hooks and focuses the entire world into a global village where people of all races can easily get in touch, see or speak to one another and exchange information from one point of the globe to another (Shitta, 2002). This explains why large populations of people who use the internet are students and young people who are more inclined to explore internet and other ICT resources for education, social interaction and entertainment (Onwuka & Koko, 2010). Many researchers (Luambano & Nawe, 2004; Adogbji & Akporhonor, 2005) have identified the impacts of the internet on higher education studies. Adogbji and Akporhonor (2005) pointed out that internet is very important to tertiary institution students because it enables them to have access to timely, accurate and relevant information. Also, internet helps in accessing a wide range of up-to-date information and enables schools and other academic institutions to disseminate information to a wider audience using websites and search facilities (Luambano & Nawe, 2004). Vast and varied learning experiences have been made available through the internet as information can be dispatched regardless of distance and borders.

Today's education system faces the challenges to prepare individuals for the information society in which one of the most important aims is to handle information (Aderibigbe & Aramide, 2012). The revolution of ICT and particularly the internet is exerting profound effects on institutions of higher learning and the current effort to use the internet in tertiary education is guided by two different approaches. The first approach seeks to improve existing forms and structures of post-secondary instructions to create better, faster, and cheaper versions of today's course and curricula by means of the internet. In second approach, the internet can transform tertiary education into student-centered learning rather than institution or faculty-centered instruction. The internet promotes equality of educational opportunities by offering quality learning materials which helps to accelerate, enrich and deepen basic skills both in teaching and learning. It motivates and encourages students in learning as it helps them to be more independent and responsible for their own learning. Internet also provides resources and services for students thereby enabling them to meet their individual needs (Aderibigbe & Aramide, 2012). According to Abolade and Yusuf (2005), the use of internet allows for networking among students and teachers, thus facilitating exchange of ideas, sharing of resources and improved teaching-learning practices as well as provides opportunity for connecting schools to the world as learning is expanded beyond the classroom.

However, internet is not a solution to all the problems facing Nigerian educational system, although it is of great help. Three major things need to be considered in the use of internet in the university. They are: i. inappropriate people and information, ii learning the internet takes time, and iii. the digital divide. The internet being an open system that provides access to people and information from all over the world can sometimes contain what might be considered as inappropriate for access by young students. Thus, students, as well as teachers spend much time perfecting their internet skills before applying them effectively in other science subjects. This proffers two problems; firstly, the curriculum in most schools is already over loaded mostly with items that prepare students to do well in tests that have little or nothing to do with using the internet effectively. Secondly, most teachers do not have enough skills to work comfortably with students who are routinely using the internet and other ICT facilities. Therefore science teachers need to make use of available ICT resources to help students achieve high standard in education.

Studies (Lishan , 2004; Agbatogun, 2006; Ugwuanyi, 2010; Christensen in Okigbo & Okeke, 2012) had identified major barriers to effective use of ICT in education to include; lack of access to basic facilities, lack of competence, lack of technical support, resistance to change and negative attitude, low internet connectivity, and inadequacy in the use of internet and other ICT resources. This is corroborated by Neitha (2007) who specifically emphasized; cost of connectivity, accessible and reliable electricity, lack of trained personnel and unavailability of infrastructure, as major factors that can stand in the way of successful integration of internet into the curriculum in African countries like Nigeria. Lishan (2004) faulted technical obsolescence of hardware and software which may pose problems of access to digital form, funding and digital resources. However, despite the fact that users gain high level of familiarity with computer and web searching, they are still unable to see the value of internet due to their lack of adequate skill, especially with respect to navigation, support and usability.

The ability to use ICT skills is becoming a necessary form of literacy at all levels of education, regardless of one's gender. It is yet unclear whether gender difference in attitude to and use of the internet are stable over time or consistent across countries and culture. Okigbo and Okeke (2012) found that there was a significant difference in the problems experienced by male and female mathematics teachers in using the four ICT elements(internet, CDROM, digital image technology, and video referencing) for instruction; female mathematics teachers experience more difficulty than males. Some technology related factors that tend to favour male users of internet facilities and ICTs in general include: stereotyped views of female users, male oriented aggressive formats of computer stimulation programs and online discussion groups that lack online etiquette and civility that women desire, prevalence of internet pornography, low number of women in technology's power positions.

Despite the numerous advantages in using the internet as an educational tool, there are setbacks such as privacy problems, plagiarism, unfamiliarity with the internet environment, and so on. The problem of this study is 'to what extent do Nigerian University Science Education students make use of internet facilities in learning?'

1.1 Research Questions

1. What percentage of the Nigerian University science education students make use of the internet facilities?
2. What are the ICT skills on internet browsing required and possessed by the University students?
3. What is the access point, experience and service usage of the internet by Science Education University students?
4. How does the attitude of male University Science Education students towards the use of the internet compare with that of their female counterpart?

2. METHOD

The study design is descriptive survey that employed a sample of 700 Science Education University students from Federal owned Universities (300) and State owned Universities (400) drawn from eight Universities in South East Zone of Nigeria, that have a Science Education Programme. The instrument used for this study was the Questionnaire on Internet Usage (QIU) constructed by the researchers. The QIU was made up of Parts A and B. Part A concentrated on

demographic data (university, course, level, e-mail address, and gender) of the respondents and the time spent on the average in the internet every week while Part B was made of 35 items divided into four sections. Section I collected data on the percentage of Nigerian University Science Education students that make use of internet facilities; section II covered the ICT skills on internet browsing required and possessed by the University undergraduates; section III concentrated on the access point, experience and service usage of the internet by the university students; and section IV covered the attitude of male and female university students towards internet usage. A four-point scale was used where the rating ranges from 1 to 4, 1 point referred to Strongly Disagree and 4 points was rated as Strongly Agree. For a statement; mean of 2.50 or below was regarded as disagree by the respondents while mean above 2.50 was taken to be agreed by them.

The instrument was validated by three University lecturers; one from Computer Science Department, the other from Science Education Department, and finally a Measurement and Evaluation expert. They were also given the problem of the study, research questions, and hypotheses; and were asked to review the clarity and relevance of the items in relation to the problem under investigation. Their comments and recommendations served as a guide to the modification of the items in the questionnaire. Also, Cronbach alpha (α) technique was used to determine the internal consistency of the instrument which was found to be 0.87. To collect data for the study, the researchers with the help of eight Research Assistants visited the entire sample Universities. A total of 700 copies of the questionnaire were administered to Science Education University students from Federal owned Universities (300) and State owned Universities (400). The completed copies were collected on the spot. Also, the data collected were analyzed using mean and percentage to answer the four research questions and the t-test for testing the two hypotheses.

3. RESULTS

The analysis of the data collected through the demographic data on university, course, level, e-mail address, and gender of the students showed that: 300 students were from Federal owned Universities and 400 from State owned Universities; 412 students in 200 level and 288 in 300 level; 18.6% of the Nigerian Science Education University students had no e-mail address while 81.4 % had; and 180 males and 520 females were in Science Education Departments in the eight Universities in the South East Zone of Nigeria. However, the results of the study were presented on tables one to six according to the research questions.

3.1 Research Question 1: What percentage of the Nigerian University Science Education students make use of the internet facilities?

Table 1: Percentage level of Internet usage by Science Education University Students

S/N	Internet Usage	Mean Responses	Percentage Responses	Remarks
1	I have used the internet for at least a year.	2.67	66.8%	Agree
2	I use the internet before I got admission into the University.	2.15	53.8%	Disagree
3	I am familiar with the internet environment and have used it for three years or more.	2.31	57.8%	Disagree
4	I make use of web/www which is the newest and fastest growing segment of the internet.	2.23	55.8%	Disagree
5	I hope to start using the internet by next semester.	1.90	47.5%	Agree
6	I can surf the internet.	2.62	65.5%	Agree
7	I started using the internet immediately I entered the University.	2.25	56.3%	Disagree
	Total	2.30	57.5%	Low level

3.2 Research Question 2: What are the ICT skills on internet browsing required and possessed by the Nigerian University student?

Table 2 presents the analysis of research question 2.

Table 2: ICT Skills on Internet browsing required and possessed by the Students

S/N	ICT Skills on Internet browsing	Required	Possessed	Remarks
1	Turn on the computer.	4.00	3.50	Agree
2	Open document from start menu.	3.92	2.83	Agree
3	Use the internet explorers.	2.80	2.13	Agree/Disagree
4	Use skillful choice of keywords.	3.15	2.05	Agree/Disagree
5	Access the related topics.	3.70	1.92	Agree/Disagree
6	Enter web addresses.	3.22	2.05	Agree/Disagree
7	Enter the search questions.	2.46	1.07	Disagree
8	Check and send mails.	3.28	2.52	Agree
9	Save in a storage device.	3.45	2.64	Agree
10	Close the window and shut down the computer	3.92	3.44	Agree
	Total	3.39	2.42	Required/Not possessed

To find out if there is any significant difference in the level of ICT skills on internet browsing required and possessed by the University Science Education students, the t- test comparison between the two means responses carried out. Table 3 presents the summary of the analysis.

Table 3: The t-test comparison of ICT Skills on Internet browsing required and possessed by students

Responses	N	Mean	Std deviation	α	df	t-cal	t-crit
Required	10	3.39	1.02	0.05	18	2.212	1.734
Possessed	10	2.42	0.94				

3.3 Research Question 3: What is the access point, experience and service usage of the internet by Science Education University students?

Analysis of research question 3 is presented on Table 4.

Table 4: Access point, experience and service usage of Internet by the Students

S/N	Access point, experience and service usage	Mean (\bar{X})	Std Dev. (SD)	Remarks
1	I use internet to send and receive message through e-mail.	2.22	1.20	Disagree
2	Relevant information on university programs are obtained from browsing the internet.	2.57	1.10	Agree
3	I access the internet through my university digital library.	2.40	0.83	Disagree
4	I access the internet using my own modern.	2.21	0.76	Disagree
5	I access the internet through cyber cafes.	2.70	1.02	Agree
6	My university has a steady power supply with the help of generator sets.	2.16	0.55	Disagree

7	I access the internet using my personal computer.	2.56	1.00	Agree
8	Low internet connectivity is the problem I experience during browsing.	1.96	0.42	Agree
9	My university has no functional digital library.	2.57	0.91	Disagree
10	Unstable power supply is an issue that affects the internet usage.	2.41	0.52	Agree
	Total	2.38	0.83	Disagree

3.4 Research Question 4: *How does the attitude of male University Science Education students towards the use of the internet compare with that of their female counterpart?*

Table 5 presents the analysis of research question 4

Table 5: Attitude of male and female University Students towards the use of the Internets

S/N	Attitude towards the use of the internet	Gender	\bar{X}	SD	Remarks
1	I prefer using the internet to read up my courses in school.	Male	3.31	0.58	Agree
		Female	2.27	1.02	Disagree
2	I only use the internet when my lecturers force me to do so.	Male	2.45	1.10	Disagree
		Female	3.19	0.98	Agree
3	Information I got from the internet are most of the times not useful to me.	Male	2.25	0.66	Disagree
		Female	2.58	0.82	Agree
4	I always do my course assignments using the internet.	Male	3.28	1.03	Agree
		Female	3.02	1.00	Agree
5	Browsing the internet is usually on a daily basis.	Male	1.91	0.43	Disagree
		Female	1.75	0.83	Disagree
6	Browsing the internet is usually on a weekly basis.	Male	3.28	1.03	Agree
		Female	3.02	1.00	Agree
7	Browsing the internet is usually on a monthly basis.	Male	2.35	0.32	Disagree
		Female	2.75	0.41	Agree
8	I use the internet for at least three hours a week.	Male	3.37	0.45	Agree
		Female	2.65	0.55	Agree
	Total	Male	2.78	0.70	Agree
		Female	2.65	0.83	Agree

To determine the significant difference in the mean attitude of male and female University Science Education students towards internet usage, the t-test for comparison of two means was employed. The summary of the test statistics is presented on Table 6.

Table 6: The t-test comparison of gender attitude towards Internet usage

Participants	N	Mean	Std deviation	α	df	t-cal	t-crit
Male	180	2.78	0.70	0.05	698	2.043	1.645
Female	520	2.65	0.83				

4. DISCUSSION

4.1 Discussion of the results

The findings from the results of this study showed that a large number of University Science Education students have good knowledge of and are familiar with the internet because many of them have used the internet for at least one year. However, Table 1 revealed a mean value of 2.30 (57.5%) which is less than the acceptable mean value of 2.50 (62.5%), showing that a higher percentage of the University science education students do not make use of the internet facilities in learning. The finding deviated from that of Onwuka and Koko (2010), who posited that young people and particularly students are more inclined to explore internet and other ICT resources for education, social interaction and entertainment. This is not surprising because students may spend a lot of time on the internet concentrating more on social interaction and entertainment than on their education.

The results from Table 2 revealed that out of ten ICT skills on internet browsing listed; nine of them were required by the University Science Education students while only five were possessed by them. To ascertain whether there is a significant difference between the university students required and possessed ICT skills for internet browsing, the t-test for comparison between the two means was used. The finding from the test (Table 3) showed that there is a significant difference in the level of ICT skills on internet browsing required and possessed by the University Science Education students. This implies that many ICT skills required from the students were not possessed by them. The finding gave credence to the findings of Ugwuanyi (2010) who reported that teachers' lack of competence poses a major barrier to effective integration of ICT in the mathematics classroom.

The findings from Table 4 showed that cyber café is the most widely used access point to the internet by University students. Also, few University students make use of the school digital library while many of them access the internet using their personal computer. Table 4 further revealed that low internet connectivity and unstable power supply were major problems encountered while using the internet. This is affirmed by Lishan (2004), Nertha (2007) and Ugwuanyi (2010) who identified low internet connectivity and accessibility to reliable electricity as major factors that can stand in the way of successfully integrating the internet and other ICT elements into the educational curriculum.

The findings from Table 5 revealed that male University Science Education Students make use of the internet in learning more than the females. This showed that gender is a factor that affects the level of internet usage. The researchers also observed that male students spend an average of 3.3hrs/week online while female students spend an average of 3.0hrs/week online. To determine if there is a significant difference between the mean attitude of male and female University Science Education students towards internet usage hypothesis two was tested. Results from Table 6 showed that male University Science Education students differ significantly in their mean attitude towards internet usage from the female students. Thus male students have more positive attitude towards internet usage than the females. This is confirmed by Okigbo and Okeke (2012) who found that there was a significant difference in the problems experienced by male and female mathematics teachers in using ICT elements (internet, CDRom, digital image technology, and video referencing) for instruction; thus, female mathematics teachers experience more difficulty than males. It is not surprising to find that men still outpace women on the internet and other ICT in terms of various usage measures.

4.2 Conclusion

From the findings, the research concluded that; A large percentage (62.5%) of the University science education students do not make use of the internet facilities in learning, there is a significant difference in the level of ICT skills on internet browsing required and possessed by the University Science Education students, cyber café is the most widely used access point to the internet by University students, low internet connectivity and unstable power supply were major problems encountered while using the internet, male students have more positive attitude towards internet usage than the females, and male University Science Education students differ significantly in their mean attitude towards internet usage from the female students.

4.3 Recommendations

Based on the findings, the study recommended that: Government policy should be directed at ensuring reliable power supply as well as technical support to universities in order to boost the use of ICTs; Education authorities, University management, and lecturers should make efforts to infuse the internet into education system which would give students more reasons to explore it; and University management should create a course and/ or an avenue to teach new students how to use the internet.

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