

POSSESSION AND UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TOOLS AND SERVICES BY SCIENCE AND NON – SCIENCE EDUCATION UNDERGRADUATES

Dr. C. E. Idoko

***Department of Science and Computer Education,
Enugu State University of Science and Technology, (ESUT)
Enugu.***

Abstract

The study empirically identified the ICT tools and services which science and non –science education undergraduates of Enugu State University of Science and Technology (ESUT) possess and/ or have access to. Two research questions guided the study for which survey design was adopted. A researcher made, 35-item structured questionnaire with a reliability coefficient of 0.71, validated by university lectures was used to collect data. Frequency counts and percentages were employed in answering the research questions. Both groups of undergraduates possess and or have access to most of the items and services listed. The science education group however had a few more than the non–science education grouped. The former group also utilizes the tools and services for academic purposes but the later group does not. It was recommended among others that lecturers in the university should map out strategies of evaluating students learning that would compel them to use ICT tools and services for academic purposes.

Information and communication Technology (ICT) supports activities involving the creation, storage, manipulation and communication of information together with their related methods, management and applications (Oliver and Chapman, 1990). It has revolutionized every aspect of human endeavour particularly education which is the “blood” that sustains all forms of growth and development globally. The global trend of focus and emphasis on the use of ICT in all works of life has been widely acknowledged. Agbamu (2011) substantiating this stated that employers look for employees who have ICT competencies and the know– how in ICT to fit into the current world of work. This is because the 21st century world of work is characterized by electronic –mail (e-mail), fax machines and mobile phones used for communication. There are also electronic business (e-business), electronic commerce (e-commerce), computer-aided-instruction or computer-assisted-instruction (CAI), electronic payment and banking (e-payment and banking) and mobile commerce (m-commerce)

Technology is fast advancing leading to the creation of many new ICT tools that vary in size (getting smaller by the day), level of complexity, accuracy, precision and therefore application. These can be classified into three broad groups thus:

1. Information technology which uses computers. This has permeated such areas as commerce, education, governance, health etc.
2. Telecommunication technology which include telephone (fixed and mobile) some with fax, radio and television broadcasts often through satellites.
3. Networking technologies the most prominent of which is the internet. Also in this group are included mobile phone technology, satellite communications, and voice over IP (volp) telephony.

Ibe-Bassey (2009) identified communication technologies, network, computer and mobile technologies to be the components of ICTs and the computer is central in all these because it is the core of all modern ICT activities (Ifegbo, 2011). These according to Mmeremikwu- Fac (2010), “have come to dominate modern society and become the basis for the survival of the modern man thus, defining what is now called information society”. To live and function effectively in the information controlled society, one needs to possess or have easy access to the tools associated with modern ICT technologies. These tools include computers (table-, lap- and palm-tops), CD ROMs, digital television and camera, mobile phones, i-pad, various computer accessories like the flash-drive, external hard drive etc.

Possession and or having easy access to these tools and services associated with them are necessary but not more important that the use to which they put especially in the education industry where they constitute very valuable tools for effectively teaching and learning. This has not been more apt than now that the role of the teacher has changed from that of a ware-house and dispenser of knowledge, skills etc to that of a facilitator, guide and moderator (Idoko, 2010). Possessions and appropriate utilization of these ICT tools facilitate access to sufficient doses of high quality and life-enhancing appropriate knowledge, and skills which are also relevant to academic growth and development for not only the teachers but also the students. This is what appropriate integration of ICTs into teaching and learning in schools is all about. It means that students (learners) that possess and or have access to these ICT tools and services associated with them should, on their own, guided or unguided, supervised or unsupervised enhance their learning by utilizing them for academic purposes.

Science and non-science students of Nigerian universities are equally exposed to opportunities that enhance the acquisition of basic skills and knowledge that would enable them manipulate and make effective use of the ICT tools. Such courses as Computer Appreciation, Introduction to Computer Science among others are common contents of the academic programmes of Nigerian universities. Moreover, the proliferation of computer training cafes as found in every nook and cranny of both urban and rural communities in the country provides alternative opportunities for the

acquisition of at least, basic skills of ICT tools and services for anyone who cares for them.

Ali (1986), Olufalajini 1985 and Eze (2003) observed that non-science students of universities in Nigeria have low level scientific literacy in a world dominated by science and technology. This according to Eze (2003), is an unhealthy development. The lack of empirical evidence known to the researcher on the possession and utilization purposes of ICT tools and services by science and non science undergraduates of Enugu State University of Science and Technology (ESUT) is the problem of this study. The focus on would-be teachers is justified by the recognition of the indispensable place and role if teachers in the impartation of desirable knowledge and skills to learners in the education system. ICT tools and services that of interest in the study are particularly those associated with creation, manipulation, accessing, storage, dissemination and utilization of information in this information age.

Purpose of the Study

Using Enugu state university of science and technology (ESUT) as a case study, the study was to determine the ICT tools possessed by science and non-science education undergraduate as well as what they utilize them for. Specifically, the study focused on:

1. ICT tools and services the two groups of students posses and or have access to,
2. what purposes the students use the tools and services to serve.

Research Questions

The study sought answers to the following research questions:

1. What ICT tools and services do the science and non science education undergraduate of ESUT posses and or have access to?
2. What do the students use the ICT tools and services they possess or have access to for?

Research Method

Sample survey design was adopted. All the 200,300 and 400 levels students in the four departments in the Faculty of Education, ESUT constituted the population. Students in three out of the four departments in the faculty were classified as science education students. These were students in Science and Computer Education(SCE), Health and Physical Education (HPE) and Technical and Vocational Education (TVE) departments while students in the department of Educational Foundation (Ed.Fd) were the non-science education graduates.

Stratified and simple random sampling techniques were employed in obtaining a total of 418 students. Out of these, 236 were science education undergraduates (90 from TVE, 88 from SCE and 56 from HPE departments) while 182 were non-science education undergraduates from Ed. Found. Department, a two–part 36-item structured questionnaire was used to collect data from the respondents. The 3-items a part of the

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questionnaire was concerned with the respondents department, gender and level of study. The 36-item B part was organized in two clusters in line with the two research questions that guided the study with 18 items in each cluster. The items were of the two-response option type of Agree and Disagree. The instrument was validated by one Computer Education and one Measurement and Evaluation lecturers both in the Department of Science and Computer Education of ESUT. Their observations and suggestion led to addition of more items to cluster two of part B and rewording of the instruction to the respondents. A reliability index of 0.71 was obtained for the questionnaire using Cronbach alpha statistic following its administration on 26 students of Faculty of Education in Ebonyi State University, Abakaliki. 18 of the student were non- science education undergraduates while eight (8) were of science education. The 200, 300 and 400 level class representatives in each of the four departments in the Faculty of Education, ESUT served as research assistants by administering the questionnaire in their classes and departments. A total of 12 research assistants were therefore involved and this among other things, helped to ensure that all the 418 copies of the questionnaire administered were returned. However one copy was returned blank i.e. not filled while another was so much mutilated that it was discarded. In effect therefore, it was 416 copies of the questionnaire that yielded the data that was collated and analyzed.

Frequency counts and percentages were employed in answering the research question. An item stands accepted if 50 or more percent of the respondent is agreed to it but rejected if less than 50 percent of them agreed to it.

Data and Results:

Results are presented below in line with the research questions and hypotheses that guided the study.

Research Questions 1:

What are the ICT tools and services that science and non-science education undergraduates possess, and or have easy access to?

Table 1: ICT Tools and Services that the Undergraduate Posses and or Have Access To

S/No	Items	Science Group		Non-Sc. Group		Sc. & Non-Sc. Groups	
		Freq	%	Freq.	%	Freq.	%
1	I possess and or have easy access to: Mobile phone which can browse	214	91.45	168	90.32	382	91.83
2	Desktop computer	216	92.31	129	69.35	245	58.89
3	Laptop computer	184	78.63	16	8.60	200	48.08

4	i-pad computer	18	7.69	22	11.83	40	9.62
5	Television set	231	98.78	182	100	413	99.28
6	Radio set	234	100	182	100	416	100
7	Cassette player	226	96.58	122	65.60	348	83.65
8	CD ROMS	184	78.63	16	8.60	200	48.08
9	Internet facility	196	83.76	26	13.98	222	53.37
10	Computer soft wares	22	9.40	2	1.08	24	5.77
11	Digital camera/video	32	13.68	41	22.04	73	17.55
12	Transparencies	16	6.84	-	-	16	3.85
13	Modem	96	41.03	26	13.98	122	29.33
14	Flash Drive	184	78.63	14	7.53	208	50.00
15	Audio/Video Player	103	44.02	161	86.59	264	63.46
16	e-mail address	143	61.11	52	27.96	195	46.88
17	Face book address	214	91.45	112	60.22	326	78.37
18	Non-Browsing mobile phone	206	88.03	114	61.29	320	76.92

Data in Table 1 above indicate that in line with 50% and above adopted as the acceptance range, the science and non-science undergraduates put together possess and or have access to 10 out of the 17 ICT tools and services listed in the table. These are items 1, 2, 5, 6, 7, 9, 13, 14, 16 and 17. The science education undergraduate possess and or have access to 12 of the items which are items 1, 2, 3, 5, 6, 7, 8, 9, 14, 15, 16 and 17 while the non-science undergraduate possess and or have access to seven (7) items namely items 1, 2, 5, 6, 7, 16 and 17. The difference in terms of possession and accessibility between the two groups of undergraduates is that while science education undergraduate alone possess and or have access to items 3, 8, 9, 14 and 15, the non-science education undergraduates do not. These items are laptop computer, CD-ROMs, Internet facility, flash drive and e-mail address.

Research Question 2:

What do the students use the ICT tools and services they possess and or have access to for?

Table 2
Uses of the ICT Tools and Services by the Students

S/No	Items	Sec. Students		Ed Non Sec Students		Sec & Non Sec Ed Students	
		Freq.	%	Freq.	%	Freq.	%
	I use ICT tools and services to:						
19	make calls for socializing	234	100.00	180	98.90	414	99.52
20	send texts for social purposes	203	86.75	158	86.81	361	86.78
21	chat with face book group members	214	91.45	112	61.54	326	78.37
22	browse the net for academic purposes	198	84.62	48	26.37	246	59.13
23	browse the net for social reasons	121	51.71	103	56.59	224	53.8
24	fill my free and/or leisure periods	216	92.31	98	53.85	314	75.48
25	do my school work e.g. Projects	205	87.61	41	22.53	245	59.13
26	save academic documents e.g. lecture notes, questions, etc	136	58.12	3	1.65	139	33.41
27	purchase of clothes, shoes, trinkets etc	4	1.71	16	8.79	20	4.81
28	purchase books and other learning materials	-	-	-	-	-	-
29	exchange/share knowledge with other students in other places	32	13.68	14	7.69	46	11.06
30	exchange mails with my lecturers for academic purposes	153	65.38	33	18.13	286	44.71
31	maintain contact with my relations	234	100.00	179	98.35		
32	update my knowledge about sports events e.g. Football scores	126	53.85	101	55.49	227	54.57

33	ping to avoid boredom always	212	90.60	112	61.54	323	77.64
34	be informed about latest and good music and other products	119	50.85	163	89.56	282	67.79
35	read newspapers, magazines etc	68	29.06	3	1.65	71	17.07
36	entertain myself by playing games, watching movies etc.	203	86.75	148	81.32	51	12.26

Both science and non-science education undergraduates put together utilize the ICT tools they possess and or have access to for 10 out of the 18 purposes or items stated in table 2 above. It should however be noted that it is only two of the tens items are purposes related with their studies. These are items 21 and 24. The other eight things for which they use the tools and services have no direct relevance to their studies.

Science education undergraduate put the tools and services to use for 14 out of the 18 purposes listed above. These are all the items less items 26, 27, 28 and 34. Out of the 14, 4 of the items (i.e. items 21, 24, 25, 29) have direct relevance to their studies. The non-science education under graduates agreed to only ten (10) of the uses listed and none of the ten has direct relevance to their studies. It means that the non-science education undergraduates in ESUT do not utilize ICT tools and services available to them for their studies while the science education undergraduates do. It should be noted that none of the respondents utilize the tools and services to purchase books and other learning materials.

Discussion of Results

The result of the study include that both the science and the non-science education undergraduates of ESUT possess and or have access to most of the ICT tools and facilities listed. The science education group however has more of them than the non-science group. The difference in possession and or accessibility to the tools and services extended to their utilization tools for academic purpose. Specifically, the non-science education groups do not utilize them for any of the academic purposes listed but for just social and recreational purposes. The science education group did utilize the tools and services for some (four) academic purposes. This could be because of the nature and therefore, the demands of some of the courses e. g. Computer Science courses offered by the students in the science group particularly those in the Department of Science and Computer Education.

However, ICT tools and services are science and technology-based hence, the difference in their possession and or accessibility as well as utilization between science and non-science education undergraduates as revealed by this study support earlier findings of Eze (2003). He established low scientific literacy status of non-science

students. The result of the study agrees with that of Oludipe (2004) who observed a considerable difference in computer literacy status of teachers based on their area of specialization (Science/Non-science areas) in favor of those in science discipline. Similar results by Ali (1985) and Nwosu (1997) were also cited in Eze (2003)

Conclusion

The study revealed that the undergraduates in the Faculty of Education, ESUT possess and or have access to relevant ICT tools and services irrespective of their area of specialization (Science/Non-science). However, most of them particularly the non-science students do not utilize them for academic or school learning purposes but for only social and entertainment purposes. This should not be particularly for teachers who should educate others on how ICT tools and services enhance teaching and learning.

Recommendations

Based on the result of the study it's recommended that:

1. Lectures in Faculty of Education in the universities should map out strategies that would compel undergraduates in the faculty to learn how to make use of ICT tools and services available to them to enhance their learning, e.g. giving those projects and assignments that involve the use of the ICT tools and services.
2. Uses of different ICT tools and service should be built into GS Course contents offered by both science and non-science undergraduates to provide every student the opportunity to imbibe the culture and cultivate the habit of using them effectively within their first year in the university.

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