

# Students' Use of Information and Communication Technology in the Faculty of Allied Medical Sciences, University of Calabar, Nigeria

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## Abstract

**Background:** This study was meant to evaluate the knowledge and utilization of information and communication technology (ICT) resources by students in the Faculty of Allied Medical Sciences, University of Calabar and recommend possible reforms to enhance knowledge and use of ICT by the students.

**Methods:** A 31-item questionnaire was developed to evaluate the knowledge and use of ICT by students in the Faculty of Allied Medical Sciences, University of Calabar. The questionnaire was administered to 240 students in the Faculty through random sampling after it was tested for validity. Data obtained were evaluated in terms of percentages and simple differences.

**Results:** About 88 (40%) students had good knowledge of ICT while the remaining 132 (60%) did not have good ICT knowledge and were not trained previously. It was also discovered that all the Departments in the Faculty of Allied Medical Sciences did not have adequate ICT facilities. The results also showed that few students in the Faculty use ICT facilities for assignment, research and updating lecture notes while most students (n=194, 88.18%), use the available ICT facilities mainly for social networking and recreation.

**Conclusion:** ICT use by students in the Allied Medical Sciences faculty, University of Calabar, is low due to inadequacy of the ICT facilities and lack of training and competence.

**Keywords:** COMPETENCE, STUDENT, KNOWLEDGE, UTILIZATION, ICT, RESEARCH

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## Introduction

Information and Communication Technology (ICT) consists of the resources and tools which provide access to information through telecommunications. ICT is generally acknowledged as an agent for change in teaching, learning and in information acquisition (1). The use of ICT has greatly impacted traditional methods. Therefore, the need to reform education to meet current

desires is highly felt. In essence, ICT has contributed positively to the teaching, learning and research processes (2-4).

The importance of ICT capability cannot be over-emphasized as it is fundamental for participation and engagement in today's globalized, and modern information society. ICT is useful in discovering, examining and presenting information with the aim of modelling situations and bringing about solutions to problems in the society. It is also a gateway to new ideas and experiences that are not limited to geographical and cultures boundaries. ICT is known to promote scientific collaborations and information exchange on a wide scale.

Education is amongst the foremost areas where

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ICT finds numerous applications. According to Wheeler (5), ICT is capable of preparing the next generation for future lives and careers, and can be used in to minimize the "digital divide" existing in schools between learners from parents with different financial capabilities (6). For instance, ICT increases the students' ability to embrace the rapidly changing technology and keeps them aware of innovations and inventions in their field of study. Also, ICT in education can bring about students' familiarity with modern communication equipment as well as the related social and ethical issues. Furthermore, it encourages the learners to take part in active learning involving simulation.

ICT use in modern day learning is almost unavoidable by learners. Through ICT, students can obtain necessary information in books, journals and other educational materials from the internet (7).

Several researchers have made significant input in ICT, especially as regards its accessibility and utilisation by students and academic institutions. Olorunfemi, Mostert and Ocholla (8) investigated the skills of Nigerian law students in using electronic libraries and discovered that the law libraries were not adequately equipped, not accessible, and poorly utilized. Law students were found to be ICT literate and capable of using the internet and law database conveniently without assistance. They identified the problems of slow bandwidth, poor power supply, inadequate computer systems, inadequate funds, denied access to students and lack of technical experts in the law libraries and recommended that the Nigerian Government should address the observed problems in order to motivate students to use libraries.

The above observations concerning the law students and Nigerian law libraries are supported by another study showed improved productivity of the Nigerian Universities and academic staff due to accessibility and utilization of ICT resources (9). The study recommended that managements of Nigerian

Universities should provide adequate and needed electronic resources for use by the staff to further improve their research quality. A study conducted in Ahmadu Bello University (ABU), Zaria, Nigeria on the computer knowledge amongst clinical medical students showed that most of them had no access to computer and their knowledge of computer was acquired through self-learning method. The study concluded that knowledge and utilization of computer technologies by clinical medical students in ABU was low (10). Another study conducted in Nigeria on how undergraduate law students use information resources showed a slight difference in the use of information resources by the different genders with the need to update lecture notes being the major need of information resources by the students (11). The study maintained that proper training in information resources could enhance information resources use and search. In trying to ascertain the ICT competency and gender differences among students, Teck and Yai (12) conducted a research among 159 pre-university students in Malaysia and concluded that computer and internet 'penetration' rate among the students was quite satisfactory as well as computer ownership and level of use. It also showed that gender differences pertaining to ICT competence among the students was not significant.

A surveyed on the pre-university experience of ICT among the students of Kanda University of International Studies, Japan revealed that the students were more competent in the use of ICT before they were admitted into the University (13). This was a result of their having more access to ICT technologies such as computer, i-pod, mp3 player, DVDs and CDs, and using them frequently. This was a sharp contrast to what was obtainable when they were in the University, basically because of lack of time and access to ICT facilities. Hence, there was a general reduction in the ICT experience and usage of the students in the university unlike in their elementary and secondary school years.

In India, ICT is viewed as a possible instrument that could be used to enhance the rate of education in the Country (14) and the government has developed policies toward the use of ICT in education (15) which is believed could bring about collaboration among researchers and solutions to complex problems (16). The Omani Ministry of Education has identified ICT abilities and skills needed by the young people to make productive contributions to the growth of the Country (17). In essence, the Omani students require ICT understanding and skills as they graduate from school to meet the future challenges locally and internationally.

The National Information Technology Development Agency (NITDA) was established by the government of Nigeria to rapidly develop ICT within the nation by forming alliance with the private sector through collaboration and joint ventures. The effort of Nigerian government on ICT noted here notwithstanding, it appears that the level of ICT knowledge and utilization by students in the faculty of Allied Medical Sciences, University of Calabar are still inadequate for the present day challenges in medical education. The level of training received by the students their competence in the use of ICT facilities for their studies were also uncertain. This study was intended to assess the knowledge and use of ICT resources by students studying in the Faculty of Allied Medical Sciences, University of Calabar. It was also meant to evaluate the level of competence and training the students had on ICT and make recommendation on the possible reforms that could enhance the level of ICT applications by the students.

## Materials and Methods

This study was conducted using a survey method in which data was collected using a questionnaire which was previously tested for validity (18–20). The questionnaire was designed to assess the knowledge and use

of ICT by students studying in the Faculty of Allied Medical Sciences, University of Calabar.

The study methodology and questionnaire were first discussed with some senior academics in the department of Radiography where the study originated to ascertain its moral principles, suitability and feasibility. Further ethical approval was not necessary since there was no risk to the subjects and data collected would not identify the subjects in any form. Each set of students that took part in the study was addressed immediately after lecture by the student who was a member of the research team to eliminate the possible influence that the other researchers, who were lecturers, might have on the students. The principles and importance of the research were explained to the students who were requested to take part in study by waiting to fill the questionnaire. It was clearly stated that waiting to collect the questionnaire is a sign of consent to take part in the study and no further endorsement was needed for consent.

The population size was 240 students in the Faculty, consisting of 60 students each from the Department of Radiography and Radiological Science, Public Health, Medical Laboratory Science, and Nursing Science. Ten students from each of the five year levels of study and the extra year in all the Departments within the Faculty were selected using convenience sampling. Then the number of questionnaires given to each class was determined by quota sampling, and students at each level were randomly presented with the questionnaire.

A questionnaire containing 31 questions spread over four sections: personal information of the respondent, students' ICT knowledge, ICT availability to students and, students' ICT utilization was designed and administered to the students. To facilitate quantification and analysis of data and to capture response, mainly close-ended questions were used. The questionnaires were distributed and the respondents given enough time to fill in their responses before returning them. Data

collected were analyzed through means and percentages.

## Results

220 of the 240 questionnaires distributed were returned, giving about 92% response rate. The results were arranged according to respondents' age, gender, and department. It was observed that most of the extra year students did not cooperate to complete the questionnaires administered to them. Evaluation of the percentages in this study was based on the number of respondents in each department first before the total number of respondents in the faculty was considered separately.

As shown in table 1, the respondents in the faculty were 123 (55.90%) women and 97 (44.10%) men. The number of female respondents from Nursing Science, Public Health, Medical Laboratory Science and Radiography departments were 48, 29, 24, and 22 respectively. Similarly, the number

of male respondents from Nursing Science, Public Health, Medical Laboratory Science and Radiography departments were 10, 26, 31, and 30 respectively. Nursing Science department had significantly more female than males with a ratio of about 5:1. This ratio was a reflection of the actual situation in Nursing Science where there are more female students than male students.

19.1% of the respondents were 15–19 years old, 25% were 20–24 years old, 20.5% were of 25–29 years old, and 20.9% were 30–35 years old while 14.5% of the respondents were above 35 years. The female respondents in the Faculty of Allied Medical Sciences, University of Calabar that took part in this study were about 12% more than their male counterparts. Table 2 shows that most of the students that took part in the study did not undergo any training in ICT and could neither use simple computer program nor perform software installation. However, majority of them could use ICT to obtain answers for their studies.

The students' ICT knowledge rating in table 3

**Table 1.** Gender distribution in the faculty allied medical sciences (M=male, F=female)

Age (year)	Gender									
	Nursing Sc		Public Health		Medical Lab		Radiography		Faculty	
	M	F	M	F	M	F	M	F	M	F
15–19	1	8	6	5	6	5	8	3	21	21
20–24	2	6	5	8	8	7	3	7	18	28
25–29	1	11	4	3	7	6	4	9	16	29
30–34	2	12	8	6	9	4	11	3	30	25
35 and above	4	11	3	7	1	2	4	0	12	20

**Table 2.** Students' use of ICT

Questions	Responses								Total	
	Nursing Sc		Public Health		Medical Lab		Radiography		Yes	No
	Yes	No	Yes	No	Yes	No	Yes	No		
Have you undergone training on ICT?	20	38	35	20	17	35	16	39	88	132
Can you perform software installation?	5	53	2	53	3	49	6	49	16	204
Can you use simple computer program?	32	26	38	17	21	31	12	43	103	117
Can you use ICT to obtain answers for your studies?	51	7	43	12	44	8	39	16	177	43

**Table 3.** Students' ICT knowledge

Variable	Nursing Sc (%)	Public Health (%)	Medical Lab (%)	Radiography (%)	Total (%)
Poor	38 (65.52)	20 (36.36)	35 (67.31)	39 (70.90)	132 (60.00)
Good	13 (22.41)	20 (36.36)	12 (23.08)	11 (20.00)	56 (25.45)
Very Good	7 (12.07)	15 (27.27)	5 (9.62)	5 (9.09)	32 (14.55)
Total	58 (26.60)	55 (25.00)	52 (23.64)	55 (25.00)	220 (100)

shows that most of the participants had poor knowledge of ICT, about half of the participants had good knowledge while about one-third of the participants had very good knowledge of ICT. The Departments of Radiography and Medical Laboratory Sciences had less than 10% of their participants having very good knowledge of ICT. More than 70% of the participants were interested in using their ICT facilities and knowledge for research, assignments, and social networking (table 4). Not many of them

were interested in updating their lecture notes using the ICT facilities.

More than 70% of the participants claimed that poor power supply, inadequate ICT facilities, and inadequate internet services were the major factors hindering their use of ICT (table 5). About 50% of the participants stated that they were hindered by poor ICT knowledge. More than 60% of the respondents were competent in the use of Microsoft Word and internet explorer (table 6). The participants that

**Table 4.** Reasons for student's use of ICT

Variable	Nursing Sc (%)	Public Health (%)	Medical Lab (%)	Radiography (%)	Total (%)
Assignment	48 (82.76)	45 (81.02)	47 (90.38)	50 (90.91)	190 (88.36)
Research	42 (72.41)	46 (83.64)	46 (88.46)	43 (78.18)	177 (80.45)
Updating lecture notes	12 (20.69)	15 (27.27)	11 (21.15)	17 (30.91)	55 (25.00)
Social networking	51 (87.93)	49 (89.09)	50 (96.15)	44 (80.00)	194 (88.18)

**Table 5.** Factors hindering student's use of ICT

Variable	Nursing Sc (%)	Public Health (%)	Medical Lab (%)	Radiography (%)	Total (%)
Poor power supply	48 (82.76)	51 (92.73)	44 (84.62)	43 (78.18)	186 (84.55)
Inadequate ICT infrastructure	49 (84.48)	39 (70.91)	33 (63.46)	45 (81.82)	166 (75.45)
Poor ICT knowledge	27 (46.55)	25 (45.45)	23 (44.23)	31 (56.36)	106 (48.18)
Inadequate internet services	47 (81.03)	44 (80.00)	45 (86.53)	48 (87.27)	184 (83.64)

**Table 6.** Students' competence in some software packages

Variable	Nursing Sc (%)	Public Health (%)	Medical Lab (%)	Radiography (%)	Total (%)
Microsoft word	39 (67.24)	41 (74.55)	37 (71.71)	33 (60)	150 (68.18)
Microsoft Excel	10 (17.24)	8 (14.55)	11 (21.15)	5 (9.09)	34 (15.45)
Microsoft Power Point	21 (36.21)	22 (40.00)	19 (36.54)	26 (47.27)	88 (40.00)
Software installation	5 (8.62)	2 (3.64)	3 (5.77)	6 (10.91)	16 (7.27)
Internet Explorer	43 (74.14)	47 (85.85)	41 (78.85)	39 (70.91)	170 (77.27)

were competent in the use of Microsoft Power Point were under 50% while the respondents that were confident in software installation and use of Microsoft Excel were about 11% and 21%, respectively.

## Discussion

Inadequate ICT infrastructure, inadequate internet services, and poor power supply have been identified by more than 75% of the respondents as the major hindrances to their use of ICT. This is in line with a previous finding which identified poor infrastructure as one of the challenges faced by staff of Nigerian Institute of Medical Research in the use of ICT (21).

Poor knowledge of ICT by the students was not identified as the major hindrance to the use of ICT. Less than 50% of the respondents felt that poor knowledge was less a hindrance than poor power supply, inadequate ICT infrastructure, and inadequate internet services. Improvement in power supply, internet services and ICT infrastructure could bring about possible training in ICT to improve their knowledge. To reverse the problems of inadequate ICT infrastructures and power supply may require huge amount of money which the student could not afford.

The competence of respondents was very high in internet explorer with no department having a competence of less than 70%. A total competence of 77.27% was observed when the respondents from all departments were put together as a group. This high rate of competence in internet explorer could be attributed to the central role it plays in the search for materials used in research, assignment and social networking. As stated in an earlier study by Teck (12), there was no observable influence of gender on competence, use and knowledge of ICT by the students in the faculty under study.

About 40% of the respondents from all the departments put together claimed that they were competent in Power Point. This is an

indication that the students might not have much of oral presentations in their academic work. The use of ICT for social networking forms about 88% of the major reason why ICT is used by the students. The use of ICT for social networking as observed in this study could negatively impact the attention the students pay to their academic pursue rather than recreation which social networking is used for.

The low level of ICT use for most academic work by the students is hindered by their lack of training, which has seriously impacted on their ability to use ICT for assignment and research. This forms a clear lack of confidence by the students due to their low level of competence in ICT usage. To reverse this trend, it is suggested that the University authority should make available more ICT facilities and ensure adequate theoretical and hands on training for the students. Oral presentation using power point should form part of their academic work in order to develop this skill, which is very desirable at work, in the students before they graduate. It was observed in a previous study that lack of training affected the skills of respondents in the use of ICT, though some of them used ICT for research (21).

## Conclusion

Based on the findings of this study, it can be concluded that, most of the students in the Faculty of Allied Medical Sciences are deficient in ICT knowledge. This can be attributed to the following: lack of or inadequate training in ICT, inadequate ICT facilities, poor power supply and inadequate internet services. The level of use of ICT facilities by the students for the academic activities was low compared to social networking and recreation which do not enhance their academic studies.

It is recommended that the curriculum in the faculty should be reviewed to incorporate all aspects of ICT as could enhance the students' academic performance and makes them more desirable by employers after graduation. To

achieve the desired effect of the suggested curriculum review, it is necessary to make available adequate ICT infrastructure staff training. To further enhance students' use of ICT, personal ownership of computers and other ICT items by the students should be encouraged while discouraging the use of ICT for social networking and recreation.

## Conflict of Interest

The author declares no conflict of interest.

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