

SELF-ASSESSMENT OF INFORMATION AND COMMUNICATION TECHNOLOGY TRAINING NEEDS AMONG STUDENT-TEACHERS IN COLLEGES OF EDUCATION IN NORTH-CENTRAL, NIGERIA

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ABSTRACT

The utilization of ICT for teaching and learning has made education easier through the application of electronic media. The study adopted descriptive research of cross-sectional survey type. Three research questions and two hypotheses were drawn. A total of 1,211 student-teachers were randomly selected from 11 colleges of education in North-central, Nigeria. Data were collected through administration of validated questionnaire adapted from UNESCO ICT-CFT. A reliability coefficient of 0.86 was obtained from questionnaire using Cronbach Alpha. Mean was used to answer one research question raised while t-test and Kruskal Wallis were used to test the two hypotheses formulated. Findings revealed that student-teachers' self-assessment of ICT training needs in ICT integration in the colleges of education was moderate. Gender and area of specialization of student-teachers had influence on the ICT training needs of student-teacher. It was recommended among others that stakeholders, in collaboration with the private sector, should provide student-teachers with necessary awareness towards the required ICT training Needs that could enhance the quality of teaching and learning of student-teacher in colleges of education.

Keywords: *Student-teachers, ICT training needs, UNESCO ICT-CFT, Colleges of education*

INTRODUCTION

Information and Communication Technology (ICT) offer schools opportunities to improve student learning outcomes; when ICT are used in classrooms, it provides students with opportunities to develop the skills and attributes that prepare them for an increasingly ICT-mediated, globalised world. Lim (2012) stated that these skills and attributes include but not limited to, accessing information, communication, developing knowledge, presentation of ideas, problem-solving, collaboration, and learning how to learn. In these ICT-mediated classrooms, the role of the teacher is pivotal in the design and implementation of effective teaching and learning activities that engage students in the development of skills and attributes (Lim & Chai, 2008). Therefore, teachers have to be equipped and upgraded with the necessary ICT knowledge and skills in education in the pre-service teacher education experiences.

ICT are the varied collection of technological gear and resources that are employed in communication (Sukanta, 2012). Sukanta (2012) further viewed ICT as resources used to generate, distribute, collect and administer information. Shukre (2008) stated that ICT includes hardware, software, and media for collection, storage, processing, transmission, presentation of information and related services. In the field of education, ICT can be seen as a collection of technologies for gathering, accessing and dissemination of data for enhanced learning (Miller & Akume, 2009). The various ICT facilities that could be used in education include radio, television, computers, fax machine, CD Rom, internet, electronic notice board, slides, digital multimedia, video machine, VCD machine, photocopying machine, scanner, and many others (Bande, 2006). The utilisation of ICT for teaching and learning has made education easier through the application of electronic media, the internet and many others and teacher must be trained on how to use ICT during their training.

Colleges of education is one of the tertiary institutions in Nigeria saddled with the responsibility of training middle class teacher for the lower and upper basic schools. Colleges of education are aimed at producing manpower to cater for the lower and upper basic schools (Olumorin, 2008). Olumorin (2008) further noted that colleges of education are expected to contribute to national development by intensifying and diversifying its programmes for the development of manpower needs of the nation and making professional course contents to reflect our national regiments. Thus, the knowledge of ICT for the purpose of teaching and learning and cannot be underestimated. To be able to cope, or do otherwise, with these functions, there is the need for student-teachers to cultivate the habit ICT usage during their training.

Student-teachers are teachers in training in an institution that is accredited by relevant authorities to train teachers (Bello, 2006). In Nigeria, only colleges of education, faculties of education and departments of education in polytechnics are accredited to train teachers (Daramola, 2011). Daramola (2011) noted that after student-teachers undergo training in educational courses theoretically, the student-teachers are thereafter posted to school for teaching practice for a period not less than 24 weeks to put into practice all that they have learnt in theory and then assessed by their respective lecturers. This however, includes the application of ICT in their practice teaching.

Ololube (2006) noted that in assessing student-teachers ICT Needs, ICT training needs and development are paramount. In the teaching profession, communication is seen as a very important component. Hence, the development and use of ICT during instruction is highly needed (Ololube, 2006). Ololube (2006) further stated that the idea behind ICT in education produces competent teachers who can use available ICT in a school environment to effect teaching and learning. Therefore, in assessing ICT training needs of student-teachers in ICT, consideration has to be given to both the competence and performance in reflection about ICT use in education irrespective of gender, area of specialization

In sub-Saharan Africa, gender issues exist in education where the girl-child is deprived of any opportunity to gain ICT-related knowledge and skills (Yusuf & Balogun, 2012). They observed further that African women have the lowest enrolment rates in the world in science and technology education at all levels. This is why gender

is considered an important variable that may influence self-assessment of ICT training Needs among student teacher. Gender divisions appear frequently in technology discussions, and as such it is difficult to avoid the stereotypical notion that females are less-savvy in ICT-related issues. Markauskaite (2006) investigated gender difference in a self-reported ICT experience and ICT literacy among first year graduate trainee teachers and discovered a significant difference between male and female in technical ICT capabilities, situational and longitudinal sustainability in favour of the male. Another factor that may influence self-assessment of ICT training Needs among student-teachers in colleges of education included in this study was student-teachers' area of specialization.

Student-teachers' area of specialization is the various branches that exist in the body of knowledge within their learning environment (Olumorin, 2008). Student-teachers' area of specialization is the school they fall into in the college of education based on the courses they offered. As stated in the National Commission for Colleges of Education, NCCE (2012) minimum standard, there are five schools in the colleges of education system, namely School of Education, Sciences, Vocation, Arts and Social Sciences, and Languages. The kind of training received by these student-teachers in their respective areas of specialization may influence their opinion on their ICT Needs. It becomes imperative that student-teachers should be equipped with digital literacy competencies to exploit the information resources that the electronic age provides at their finger tips (Nash, 2009). Nash (2009) further stated that there is an urgent need for ICT training to be given to fresh student-teachers so as to obtain successful learning outcomes from the use of ICT irrespective of areas of specialization.

UNESCO (2011) ascertained that within a sound educational setting, technology can enable teachers and students to be more comfortable during teaching and learning process. It was concluded in the same document that these are only possible in a learning environment where student-teachers are provided with the right ICT tools and exhibit adequate competence in the application of these ICT for teaching and learning.

Student-teachers have to learn how to use ICT in the classroom situations since it has provided new possibilities for the teaching profession. However, Swamy (2010) stated that most of the teacher education institutions are facing difficulties like shortage of lecturers that are competent in the use of ICT in teaching, weak curricula, lack of ICT equipment and a host of others. Instances where ICT are available in the schools, they hardly meet the needs of the student-teachers because ICT facilities were purchased without any need assessment.

The factors affecting the extent to which student-teachers attain necessary knowledge in teacher education programmes have received little attention by researchers and policy makers (Albirini, 2006; Tezci, 2009). Usun (2003) indicated that comprehensive research is needed in education. According to Usun (2003), it is also important to identify factors that affect student-teachers' use of ICT and these includes their ICT training needs. Thus, assessing ICT training Needs of student-teachers for ICT to be utilised to their full potentials within the education system is imperative. Oyediran

and Odusami (2004) revealed that capacity development of educators and ICT facilities that can integrate ICT use and competence have been taken for granted. Thus, calling for self-assessment of ICT training needs of student-teachers among colleges of education.

Objectives of the Study

This study investigated self-assessment of ICT training Needs among student-teachers in colleges of education in North-central Nigeria. Specifically, the study based on the fourth level of UNESCO ICT-CFT (ICT) on the Technology literacy approach, determined:

1. Student-teachers' self-assessment of ICT training Needs in ICT integration in colleges of education
2. Student-teachers self-assessment of ICT training needs in ICT integration as influenced by gender.
3. Student-teachers self-assessment of ICT training needs in ICT integration as influenced by area of specialization.

Research Questions

Answers were sought to this question:

1. What is the student-teachers' self-assessment of ICT training Needs in ICT integration in the fourth level of UNESCO ICT-CFT on the technology literacy approach in colleges of education?

Research Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

Ho₁: There is no significant difference between self assessment of ICT training Needs by male and female student-teachers in the fourth level of UNESCO ICT-CFT on the technology literacy approach in colleges of education

Ho₂: There are no significant differences in the area of specialization of student-teachers self- assessment of ICT training Needs in the fourth level of UNESCO ICT-CFT on the technology literacy approach in colleges of education

METHODOLOGY

This study adopted a descriptive research of the cross-sectional survey type. This is an approach that seeks to explain phenomena by using predetermined instruments to collect data for analysis through some statistical techniques using a certain population to represent the entire population. The approach allows the researcher to measure the diverse views, perspectives, and opinions of student-teachers' self-assessment of their ICT Needs. The population for this study was student-teachers in

colleges of education in Nigeria while the target population were student-teachers in colleges of education in North-central states in Nigeria. The general sample size was drawn from student-teachers in the 23 colleges of education consisting of four federal colleges of education, ten states colleges of education and nine Private Colleges of Education. The random sampling technique was used to select 11 colleges of education from the zone since colleges of education were established by the same Decree and operate on the same minimum standard. Private colleges of educations were left out in this study because some of them did not meet the minimum standard. The sample size was determined from the total number of student-teachers in their final year of study (NCE 3) since they had completed their teaching practice exercises. Random sampling technique was also used to select the 1,211 student-teachers involved in the study out of the target population of 35,329. The sample selection of student-teachers was based on the Israel model.

The research instruments used in this study were adapted from UNESCO's ICT-CFT (UNESCO, 2011) titled "Student-Teachers ICT Training Needs in Colleges of Education" (STICTTNCOE). The questionnaire was based on the fourth level of UNESCO ICT-CFT (UNESCO, 2011) at the Technology Literacy approach. The questionnaire for student-teachers had six major sections labeled Sections A, B, C, D, and F. Section A dealt with the student-teachers bio-data containing information on the respondents' gender, and area of specialization. Section B of the instrument contained 23 items related to student-teachers ICT training on hardware with response modes of: of Extensive training, Moderate training, Little training and No training at all. Section C contains 12 items ICT training needs on software with response modes as in B. Section D contains 13 items on ICT training needs on computer operation with response mode as in B. Section E is made up of 6 items on ICT training needs on the use of other ICT with computer with the same response modes as in B. Section F contains 16 items on ICT training needs on the use of the internet with response modes as in B.

The questionnaire for the study were given to expert in Information Technology at the STEP-B project of the Federal College of Education, Okene and two lecturers in the department of Educational Technology, University of Ilorin, Ilorin to establish the face and content validity. The modification on the draft questionnaires, advice, suggestions, comments and corrections led to the modification of the questionnaire before the production of the final questionnaire. The items used in the instrument were adjudged to be relevant to what was being measured thereby ensuring both the content and face validity of the instrument. A pilot study was conducted on 20 student-teachers at the Federal College of Education, Zaria while the Cronbach Alpha was adopted to verify the reliability of the questionnaires. The items on the questionnaire for the student-teachers were reliable at 0.86. The researcher and three research assistants sought permission from the Provosts or their representatives of the sampled schools involved in the research. The researcher and his assistants visited the sampled colleges with copies of the questionnaire for administration. Out of a total of 1,360 copies of the questionnaire distributed, 1,211 copies were returned which represents 89.04% return rate. The 1,211 copies of the questionnaire returned were used for the data analysis in

this study. In assessing the self-assessment of ICT Needs among student-teachers in colleges of education using questionnaire as an instrument, mean was used to analyze the data collected. The questionnaires were coded and analyzed using Statistical Science Package for Social Sciences (SPSS) version 20.0 for windows.

RESULTS

Research Question One: What is the student-teachers' self-assessment of ICT training Needs in ICT integration in the fourth levels of UNESCO ICT-CFT on the technology literacy approach in colleges of education?

Table 1: Student Teachers' self-assessment of ICT training Needs in ICT integration

S/N	Items	Mean
1.	Student-teachers' self-assessment of ICT training Needs in ICT integration in Hardware	3.15
2.	Student-teachers' self-assessment of ICT training Needs in ICT Integration in using software applications	3.35
3.	Student teachers' extent of ICT training Needs in ICT Integration Computer Operation	3.09
4.	Student-teachers extent of ICT training Needs in ICT Integration in Using Peripheral Devices	3.21
5.	Student teachers' extent of ICT training Needs in ICT Integration in Using Internet	3.14
Grand Mean		3.19

Table 1 reveals a grand mean of 3.15 for student-teachers' self-assessment of ICT Needs in ICT integration in using hardware based on the Technology Literacy approach of UNESCO ICT-CFT. This shows that student-teachers require moderate training in ICT integration in using hardware in the colleges of education. The further reveals a grand mean of 3.35 for student-teachers' self-assessment of ICT training needs in ICT integration in using software applications. This shows that student-teachers in the colleges of education require a moderate training in the use if software applications. Also, table 1 revealed a grand mean of 3.09 for student-teachers extent of ICT training needs in ICT integration in computer operation. This reveals that student-teachers require moderate training in computer operation in the colleges of education. The table equally reveals a grand mean of 3.21 for student-teachers extent of ICT training needs in ICT integration in using peripheral devices. This reveals that student-teachers in colleges of education require moderate training in using peripheral devices. Lastly, Table 1 reveals a grand mean of 3.14 for student-teachers extent of ICT training needs

in ICT integration in using internet. This reveals that the extent of ICT training needs in using internet was moderate for student-teachers in the colleges of education. Generally, student-teachers' self-assessment of ICT training Needs in ICT integration in the fourth levels of UNESCO ICT-CFT on the technology literacy approach in colleges of education reveals a grand mean of 3.19. Thus, indicates that student-teachers in college of education require moderate training in ICT integration in the fourth levels of UNESCO ICT-CFT on the technology literacy approach.

Hypothesis One: There is no significant difference between self assessment of ICT training Needs by male and female student-teachers in the fourth level of UNESCO ICT-CFT on the technology literacy approach in colleges of education

Table 2: Student-teachers self-assessment of ICT training Needs in ICT Integration Based on Gender

Gender	N	Mean	SD	df	t	Sig (2tailed)
Male	491	316.22	31.13			
				1209	4.15	0.00
Female	720	307.04	41.73			

Table 2 shows the mean score of male and female student-teachers ICT training needs in ICT integration. Male student-teachers ($M = 316.22$, $SD = 31.13$) and the female student-teachers ($M = 307.04$, $SD = 41.73$) are significantly different, $t(1209) = 4.15$, $p = 0.00$. Hence there was a significant difference among male and female student-teachers ICT training needs in ICT integration based on the Technology Literacy approach of UNESCO ICT-CFT. This necessitated the rejection of the hypothesis. The difference is the direction of the male student teachers.

Hypothesis Two: There are no significant differences in the area of specialization of student-teachers self assessment of ICT training Needs in the fourth level of UNESCO ICT-CFT on the technology literacy approach in colleges of education

Table 3: Student-teachers self-assessment of ICT training Needs in ICT Integration Based on Area of Specialization

Items	N	Mean	Ranking	X ²	df	Sig
Education	484	666.42	2			
Sciences	324	531.69	4			
Vocation	133	690.33	1			
				44.05	4	0.00
Languages	126	607.31	3			
Arts and Social Sciences	144	415.63	5			
Total	1211					

A Kruskal-Wallis Test on table 3 revealed a statistically significant difference in optimism levels across five different area of specialization (Education, n= 484, Sciences, n= 324, Vocation, n= 133, Languages, n= 126 and Arts and Social Sciences, n=144), $\chi^2(4, n= 1211) = 44.05, p= 0.00$. This implies that there are significant differences in area of specialization of student-teachers self-assessment of ICT training needs in ICT integration based on the Technology Literacy approach of UNESCO ICT-CFT.

DISCUSSION

Finding arising from student teacher self-assessment of ICT training needs in ICT integration reveals that student-teachers requires moderate training in ICT integration. This includes the use of ICT hardware, software applications, computer operations, using computer with other peripheral devices and use of the internet. This finding is in line with UNESCO (2011) where it stressed that student-teachers are expected to understand basic hardware and software applications that would enable their productivity in the day to day use of ICT in teaching and learning. Titilayo (2010) work concurred with this finding where it revealed that the number teachers who have basic technological skill in the use of ICT are low. In comparison, Hooker, Mwiyeri and Verma (2011) reported that ICT technology literacy domain such as the ability to use ICT open ended software packages appropriate to subject matter areas and the ability to use an authorizing environment or tools to design offline and/ or web resources is low.

Finding from the study revealed that student-teachers gender had influence on student-teachers ICT training needs in colleges of education in the fourth level of UNESCO ICT-CFT in technology literacy approach. These differences are in the direction of male student teachers. This finding agrees with the work of Schumacher and Moharan-Martin (2001) but at variance with Shapka and Ferrari (2003), Oyelaran-Oyeyinka and Adeya (2004) and Teck and Lai (2011) where they stressed the dominance female in ICT related activities. Also, it opposes Imhof, Vollmeyer and Beierlein (2007) and Bhattacharjee (2008) that reported that gender gap is shrinking or it no longer exist. Hence, the issue of gender and ICT remains inconclusive.

The findings revealed differences in the student teacher area of specialization in the fourth level of UNESCO ICT-CFT in the technology literacy approach. This finding supported Oludipe (2004) that reported considerable differences in the computer literacy skills of teachers based on subject discipline; but this finding is at variance with the studies of Alcuin (2006), Thomas and Mart (2006), Olumorin (2008), Agbatogun (2010) and Daramola (2011) that reported no differences on the influence of area of specialization of student-teachers on competency, literacy level and use of ICT. This indicates that more studies need to be conducted in this area in view of this variation.

Implications of the study

These findings implied that student-teachers are aware of the benefit inherent in the use of ICT in their professional practice. However, considering the policy on integration of ICT into the teaching-learning process in the Nigerian school system, the current high level of ICT training Needs by student-teachers is still worrisome. Gender differences in student-teachers ICT needs based on the technology literacy approach of the fourth level of UNESCO ICT-CFT, calls for concern while planning and procuring ICT for student teacher. This is very important of the girl child in to benefit maximally from the current drive to integrate ICT into educational practice in Nigeria. The differences in student-teachers area of specialization in their ICT training needs in the technology literacy approach of the forth level of UNESCO ICT-CFT equally implied that attention should be given to student-teachers' area of specialization while planning for the integration of ICT into teaching and learning in colleges of education since the use of ICT cut across all discipline.

CONCLUSIONS

This study was different from other previous studies as it adapted the UNESCO ICT-CFT to investigate self-assessment of ICT training Needs among student-teachers in colleges of education. UNESCO ICT-CFT was modified to suit the purpose and context in which the study was conducted. The present study discovered that student-teachers in colleges of education require moderate training based on the technology literacy approach of the fourth level of UNESCO ICT-CFT. The study reveals significant differences in the student-teachers ICT training needs based on gender and the differences were in the directions of the male student teachers. Similarly, area of specialization had significant differences too. Based on the finding of the study, conclusions can be drawn that UNESCO ICT-CFT has built support for government and private sectors to create content, execute frameworks and measurement of teacher competencies, as part of a comprehensive approach to education reform. In order for teachers to include ICT in their daily practices, there is need for self-assessment of ICT training needs among student-teachers who are teachers in training and they must have confidence when using these new educational resources during their training.

RECOMMENDATIONS

1. Stakeholders, in collaboration with the private sector, should provide student-teachers with necessary awareness towards the required ICT training Needs that could enhance the quality of teaching and learning of student-teacher in colleges of education.
2. Government and authorities of colleges of education should take into consideration female student-teachers while planning to integrate ICT in colleges of education and in procurement of ICT facilities if the girl child must benefit from the present ICT revolution
3. Also, student-teachers area of specialization should be taken into consideration during the purchase of ICT facilities for student-teachers use in colleges of education because their ICT needs varies across their areas of specialization.

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