AN INVESTIGATION OF FEDERAL COLLEGE OF EDUCATION PANKSHIN LECTURERS INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) COMPETENCES: IMPLICATIONS FOR QUALITY TEACHER EDUCATION

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Abstract

Integration of information and communication technology (ICT) into education has been an important concern in many countries. In Nigeria national economic empowerment and development strategies (NEEDS) has made efforts in ensuring that ICT is taught at each level of education. However, as in many developing countries ICT tools are provided to teachers without considering their competencies in ICT. This study investigate FCE Pankshin lecturers ICT competency level towards the quality of teacher education, the difference in lecturers ICT competence based on their demographic characteristics and factors that had impacted on their ICT competences. The data were collected from 49 lecturers by means of closed ended questionnaire titled "Questionnaire for FCE Pankshin Lecturers on ICT Competency". The reliability coefficient of the instrument was 0.9 established through Crombach Alpha. The collected data was analyzed using statistical package of social science (SPSS) version 20.0. Decisions were made based on the mean score of 3.0. Any mean that was 3.0 and above was sufficient while below 3.0 was considered insufficient. The findings of the study indicated that majority of lecturers perceived themselves as competent in both basic and advanced use of ICT. Computer ownership, pre-service training as well as in-services training are significantly related to the perceived ICT competence. The lecturers' competence does not differ according to gender as well as according to basic and advanced ICT usage. It is recommended among others that the competence possessed by the lecturers be strengthen through workshops, seminars and in-service training, make internet service available to promote e-learning as a means of accelerating the achievement of NEEDS objectives and realization of the nation's goal of Vision 20:2020.

Introduction

The use of Information and Communications Technology (ICT) in schools is taken very seriously by governments and education systems around the world. Nigeria, like many other countries, is investing heavily in the education system to raise the ICT skills

of Nigerians and move towards the information society. This is as evident in the importance being placed on education and training in the use of ICTs and the setting of high priorities to improve learning outcomes to prepare young people for the information economy of the 21st century.

In Nigeria, National Economic Empowerment Development Strategies (NEEDS, 2005), cited by Gusen (2010) set a machinery in place as a measure to meet up with global challenges in the area of ICT, in order to achieve this, government set out six goals to promote the use of ICT capabilities at all levels. Its goal number three was set to ensure that 80% of graduates of tertiary institutions are computer literate. These shows that educational systems are under pressure to use ICT, because future day to day human activity is and will be dependent on individual competence in the use of ICT facilities.

Newhouse, Trinided and Clarkson, (2009) argued that as educational institutions move towards the mainstream use of ICT in teaching and learning, there appear to be some critical steps and vital ingredients needed for the successful infusion of ICT into our educational system. They went further to pose that although standalone computers have been in most schools for more than two decades now, networked ICT is relatively new for many schools as they continue to grapple with how to use ICT to enhance teaching and learning in our schools. The dream of having 80% of tertiary institution graduates becoming ICT compliance, directly implies that all their lecturers must be computer literate and ICT competent, their competency can be deduced to some extent from their ownership of computer at home as well as or in school, pre-service exposure to ICT courses and in-service training received in the field of ICT are all desired expectations of those saddled with the responsibility of changing the behavior of learners at the teacher education level.

Information and communication technology (ICT) play a pivotal role in enhancing the quality of teacher education. They are particularly important in helping teachers and students to perform more effectively. To make the best use of ICT, teachers must be equipped with adequate ICT knowledge and usage competencies. In the process of integrating ICT into education, both teachers' ICT competencies and how they perceive the role of ICT in their teaching/learning processes play key roles. In the area of Analysis, design, development, implementation, evaluation, and management of courses and teachers require diversified competencies and knowledge. Gusen, (2010) is of the opinion that the mainstreaming of ICT into teaching has numerous benefits such as making learning more meaningful, interesting and enjoyable by both teachers and students.

Competency has been defined in the literature as the state or quality of being adequately or well qualified to perform a task. For example, Yildirim and Yildirim, (2009) cited Mandl and Krause (2003) defined competence as a system of prerequisites for successful action in certain domains that can be influenced by practice and learning. Furthermore, Clark (2008), opined that a person gains competency through education, training, experience or natural ability. The competencies are observable or measurable attributes of knowledge, skills and abilities, these knowledge, skills and abilities must distinguish between superior and other performer.

Even after ten years, the demand for teachers with high ICT competencies and skills is increasing. In Nigeria, the goal of teacher education is to produce highly motivated, conscientious and efficient classroom teachers for all levels of the educational system, providing teachers with the intellectual and professional background for their assignment and make them adaptable to changing situations. With the global challenges of this milieu, ICT competence of teachers is necessary in the area of integration and usages of computers, telephones, projectors, power point presentation equipment, the internet etc in their day to day teaching activity. There are two general clusters of ICT competence as basic and advance competence. Basic competences are represented by entry-level skills related to basic computer operation, and the use of an array of software that supports and enhances professional productivity. Advanced competencies extend the application of basic competence to teaching, administration and counseling, and to other professional activities. Yildirim and Yildirim, (2009), suggested that: "It is the responsibility of pre-service teacher education programs in all universities and at cooperating schools to provide instruction that will allow teachers student to meet these standards." In order to use ICT effectively and to integrate it in teaching and learning processes, the schools should not only make investments in ICT, but they should also provide the necessary training and support to enable teachers to become fully capable at using these technologies (Mims, Polly, Shepherd, & Inan 2006, p.17).

Investment in ICT cannot be fully appreciated unless teachers learn how to use and integrate ICT into their teaching. When NEEDS outlined its goals for ICT education in 2005, it develop strategy that can be followed in order to realize its laudable objectives. These strategies were incorporating computer literacy in primary and secondary schools; developing and producing curricula for teaching computer education in secondary schools; and providing secondary schools and tertiary institution with ICT equipment and facilities. In line with NEEDS aspiration the federal government of Nigeria took similar initiatives by introducing computer studies at various level of its educational system and providing in-service training for teachers through seminars and workshops.

Federal college of education Pankshin is an institution designed for teacher education; its products (graduates) are expected to service primary schools particularly Nigerian certificate of education holders whereas bachelors of education degree graduates are to fit effectively into secondary schools. With the introduction of degree programs in 2009, the institutions activities have hiking. Furthermore, with the introduction of ICT National Commission for Colleges of Education (NCCE) redesign its curricula to enable prospective teachers become competent users of new technology, ICT course became a compulsory requirement for attaining a teaching certificate. Eight years gone by since the advancement of NEEDS laudable goals for ICT literacy which culminated into all institutions in Nigeria redesigning their programs, how competent are lecturers of FCE Pankshin in ICT skills towards realizing the objectives of schools redesigning of their programs? Therefore this study aims to investigate the current state of ICT competence of FCE Pankshin lecturers in regards to gender, computer ownership, ICT related courses and training, and the influencing factors in acquiring ICT competence.

Research questions

1. To what extent do FCE Pankshin lecturers possess ICT competence?
2. What are the lecturers perceived ICT competence?
3. How skilled are the lecturers in using advanced ICT competence?

Hypotheses

1. There is no significant difference in perceived ICT competence among lecturers in FCE Pankshin based on gender.
2. There is no significant difference between the basic ICT competence and the advanced ICT competency level of the lecturers in FCE Pankshin.

Methodology

The study employed a descriptive survey method using the survey design. The population for this study consists of all FCE Pankshin lecturers. A closed ended questionnaire titled "Questionnaire for FCE Pankshin Lecturers on ICT Competency" was used for the data collection. The questionnaire used in this study was developed by the researcher following a review of similar instruments in the literature by (Nwosu, N.D) and Yildirim and Yildirim, (2009). It consisted of two main sections: A) demographics, and B) ICT competency.

The demographics section consisted of 16 open-ended and multiple choices items. The ICT competency section consisted of 10 five-point Likert-type items (1 indicating Completely Insufficient, 2 insufficient, 3 neutral, 4 sufficient and 5 indicating Completely Sufficient') items 1 to 5 seeking into the lecturers basic ICT competence while items 6 to 10 dwelled on the advanced competence of the lecturers. The questionnaire was validated by two experts in ICT and the necessary corrections where effected. It was then administered by the researcher personally. The population of FCE Pankshin lecturers at the time of this study was 362. Sample sizes of 60 respondents were drawn from the population through simple random sampling technique. However, only 49 (made up of 27 males and 22 females) copies of the questionnaire were retrieved, this is due to the end of semester for 2012/2013 session examination preparation which took some academic staff out of the school, thus few academic staff were on campus to return their questionnaire.

The data collected was analyzed using descriptive statistics it was first coded and prepared for analysis using the statistical analysis software SPSS 20.0. Frequencies, means, and percentages of items were calculated decisions were made based on the mean of 3 (1+2+3+4+5=15. 15/5=3), any mean less than 3 was rejected and any mean equal to or greater than 3 was accepted.

Results: Before presenting the results of this study, demographics of the participants were provided in the following section. The findings of the study are then provided in relation to the research questions.

Research Question One: To what extent do FCE Pankshin lecturers possess ICT competence?

Table 1: Demographic Information of the Participants

		Frequency (f)	Percentage (%)
1.	**Gender:**		
	Male	27	55.1
	Female	22	44.9
2.	**Pre-service ICT Training:**		
	Had not taken computer course	22	45
	Had taken only internet	16	32.6
	Have taken only internet	3	6.1
	Have taken both courses	8	16.3
3.	**In-service ICT Training:**		
	Had not taken in-service training	32	65.3
	Had taken in-service training	17	34.7
4.	**School Computer:**		
	No school computer	9	18.3
	Have school computer	7	14.3
	Have school computer with internet service	27	55.2
	Have school computer without internet service	6	12.2
5.	**Home Computer:**		
	No home computer	23	47.0
	Have home computer	10	20.4
	Have home computer with internet service	10	20.4
	Have home computer without internet service	6	12.2

As shown in Table 1, 55.1% of the lecturers who participated in this study were male, and 44.9% were female. Regarding computer access, 53% of the lecturers had computers at home, and 20.4% who owned a computer had Internet access. 87.1% of the lecturers indicated that they had computer access at school, and 55.2% of those had Internet access. While 65.3% of the teachers had taken in-service ICT training, 34.7% had not received any ICT training. As can be seen in Table 1, approximately 55% of the teachers had taken pre-service ICT courses during their undergraduate study while 45% joined the service without pre-service training in ICT.

Research Question Two: What are the lecturers perceived ICT competence?

Table 2: Mean responses of FCE Pankshin Lecturers that possess Basic ICT competency

S/No.	Items Description	CI(1)	I(2)	N(3)	S(4)	CS(5)	Mean	Decision
1.	Use of word processor for personal and instructional purpose.	4	7	14	13	4	3.14	Sufficient
2.	Use of spreadsheet for personal and instructional purpose.	6	7	12	16	6	3.19	Sufficient
3.	Use of ICT for communication e.g. handsets	1	2	3	30	13	4.06	Sufficient
4.	Use of ICT for collection of data	7	8	10	17	7	3.18	Sufficient
5.	Use of ICT for decision-making	11	8	11	11	4	2.75	Insufficient
	Overall mean of Table 2						3.26	Sufficient

Note: CI = Completely Insufficient; I = Insufficient; N = Neutral; S = Sufficient; CS = Completely Sufficient.

The possessed ICT competence was examined using the ICT competency subscale in the questionnaire. As presented in Table 2, the findings indicate that the majority of the participants perceive themselves as competent in basic ICT competence with overall mean of table 2 been (M=3.26). The majority of the lecturers perceived their competency levels as sufficient or completely sufficient in the use of word processor for personal and instructional purpose, use of spreadsheet for personal and instructional purposes, use of ICT for communication as well as for data collection with means of 3.14, 3.19, 4.06 and 3.18 respectively. They identify insufficiency in use of ICT for decision making having a mean of 2.75.

Research Question Three: How skilled are the lecturers in using advanced ICT competence?

Table 3: Advanced ICT Competence of the Lecturers

S/No.	Items Description	CI(1)	I(2)	N(3)	S(4)	CS(5)	Mean	Decision
1.	Use of presentation tools to support instructions e.g. PowerPoint presentation	11	8	10	11	5	2.80	Insufficient
2.	Use of ICT to support instruction e.g. email, Facebook, etc.	2	3	10	29	4	3.62	Sufficient
3.	Use of ICT to support instruction out of classroom	5	9	13	16	5	3.14	Sufficient
4.	Use of ICT in assessment process of course e.g. online test/ assignment	4	13	10	13	9	3.40	Sufficient
5.	Use of ICT in Analysis process of a course e.g. computation of results and evaluation of course objectives	6	18	12	16	6	3.16	Sufficient
	Overall mean of table 3						**3.22**	**Sufficient**
	Overall means						**3.24**	**Sufficient**

Use of presentation tools to support instruction was rejected for it has a mean of 2.80 but all other items such as use of ICT to support instruction, use of ICT to support instruction out of class, use of ICT in assessment process of a course and use of ICT in analysis process of a course with means of 3.62, 3.14, 3.40, 3.16 respectively were all accepted.

Hypothesis One:
There is no significant gender difference in perceived ICT competence among FCE Pankshin lecturers

Table 4: showing t-test calculations

$\bar{x}_1$	$\bar{x}_2$	S_1^2	S_2^2	Df	t.cal	t. critical value
3.27	3.18	0.168	0.154	18	0.503	1.73

0.05 level of significance

Decision: Since 0.503 < 1.73, accept the null hypothesis and conclude that the mean difference in competence between male and female was not greater than it would be

expected by chance.

Hypothesis Two

There is no significant difference between lecturers' basic ICT competence and their advance competence.

Table 5: showing t-test calculation

$\bar{x}_1$	$\bar{x}_2$	S_1^2	S_2^2	Df	t.cal	t. critical value
3.26	3.22	0.231	0.095	8	0.242	1.86

0.05 level of significance

Decision: Since 0.242 < 1.86, accept the null hypothesis and conclude that the mean difference in basic competence and advanced competence was not greater than it would be expected by chance.

Discussion of results

The analysis of the data reveals that overall, the lecturers perceived themselves as competent, though their level of competences in just marginal since the mean of 3.24 is not too far from the neutral point. Specifically, the lecturers perceived themselves to be incompetent in using ICT for decision-making and use of PowerPoint to support instruction. Cavas, B., Cavas, P. Karaoglan and Kisla (2009) had found that most teachers (science teachers) have enough experiences in computer use and they can be expected to adopt computer technologies in their institutions.

The findings indicated that 53% had computers at home and 87.1% of the lecturers had computers access at school. This finding supports the fact that the lecturers have competences in both basic and advanced used of ICT, since they can access ICT facilities at home and in school. Medlin (2001) and Surenda (2001) in the literature reported similar findings that the accessibility and availability of computers was an important factor for affecting the use of computers for instructional purposes. Similarly, Sahin & Thompson (2006) in Cavas, B., Cavas, P. Karaoglan and Kisla (2009) found out that computer access in classroom is important for the successful adoption of computers in using instructional purposes. Many studies have investigated the relationship between teachers' personal ownership. According to Wood, Putney and Class, (1997); Monk, Swain, Ghrist & Riddle (2003), cited in Newhouse, Trinidad, and Clarkson (2009) computer ownership and access to computers were the best predictors of perceived computer competence.

Another finding was that most lecturers have had pre-service training and in-service training in the use of ICT. Pivotal to the provision of education for all are teachers who have been trained professionally to educate, improvise and integrate emerging technologies into the paradigm of education. Supporting this finding is the work of Mims, Polly, Shephard and Inan (2006) in Cavas, B., Cavas, P. Karaoglan and Kisla (2009) whose conclusion of their study revealed that in order to use ICT effectively and to integrate it in teaching and learning processes, the schools should not only make

investment in ICT, but they should also provide the necessary training and support to enable teachers to become fully capable at using these technologies. It can be concluded that well-designed pre-service and in-service ICT courses in teacher education programs and available ICT facilities in homes and institutions can increase lecturers' ICT competence.

The findings of the study further revealed that there is no significant mean difference between ICT competencies of FCE Pankshin lecturers in terms of gender. This would suggest that male and female lecturers in FCE Panskshin have the same competence about using ICT in Teaching Education. This finding is consistent with the work of (Woodrow, 1992) who found that there was no difference in male and female attitudes towards computers. Strengthening the outcome of this finding also is the finding of North and Noyes (2002). They found that using ICT tools is widely perceived as a masculine activities and their research provided evidence for a linkage between gender and technophobia.

Conclusion

In this study the researchers investigated the ICT competence of FCE Pankshin lecturers towards quality teacher education. In many studies ICT has been found as an important factor for influencing instructors' instructional ICT use. Teachers' ICT knowledge and experience are especially important for effective usage of ICT in their classroom. So a well designed pre-service and in-service ICT course in teacher education programmes and availability of ICT facilities in homes and institutions can increase lecturers' ICT competence.

Using ICT in education should not be understood as using it as a tool to transfer instructional materials and rehearsal but as a medium for learning, discovering, sharing and creating knowledge. This study recommends that lecturers should improve on their ability to use ICT in decision making and presentation by PowerPoint through constant rehearsals. More ICT materials/facilities should be available and accessible for use to facilitate the process towards realization of NEEDS goals and the nation's goals of vision 20:2020.

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