Influence of Ownership on Pre-Service Teachers' Level of ICT Needs in Colleges of Education in North Central, Nigeria

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Abstract
The world is presently characterised by change in all areas of the society and this is occasioned by development in the realm of Information and Communication Technology (ICT). This study examined influence of ownership on pre-service teachers' level of ICT needs in colleges of education in north central Nigeria. For the study, six research questions and hypotheses were developed. This study used descriptive survey type of research design. The target audience was pre-service teachers at colleges of education in the north central states of Nigeria. A random sample of 1,360 pre-service teachers from 11 colleges of education was taken. The instrument for this study was adapted from UNESCO's ICT- CFT with title "Student-Teachers ICT Needs in Colleges of Education" (STICTNCOE). The items on the questionnaire were based on the six levels of UNESCO ICT-CFT at the Technology Literacy approach. The questionnaire possessed reliability coefficient of 0.86. Based on the Technology Literacy approach of UNESCO ICT-CFT, the study's findings showed that ownership had no influence on pre-service teachers' level of ICT needs in colleges of education. It also showed that there were no significant differences between federal and state colleges of education regarding the level of ICT needs of pre-service teachers in North Central colleges of education in their understanding of ICT in education, curriculum and assessment, pedagogy, ICT integration, organization and administration, and professional learning. It was recommended that ICT projects should benefit colleges of education - federal, state or private from designated agencies such as Tetfund.

Keywords: College Ownership, Pre-Service Teachers, Level of ICT Needs, UNESCO's ICT-CFT.

Introduction

Information and Communication Technology (ICT) is a technology that facilitates information related activities. Such activities according to Ben and Ashang (2013) include compiling, storing, processing, and presenting data. The researchers also found out that these activities increasingly in recent times entail communication and teamwork. Consequently, IT became ICT. Meanwhile, Oshionebo and Ashang (2011) maintained that ICT is a means of disseminating information via a variety of channels, such as audio-visual recordings, digital data storage devices, the internet and so on. When it comes to

using ICT to educate children, there should be an organized effort, meaning that its roles, results, and involvements should be identified.

ICT have previously permeated far into society and are therefore frequently exceedingly economical; lecturers in Nigerian colleges of education often use not more than a blackboard and chalk to instruct students on any subject. Any educated citizen's daily routine now includes printed publications in the shape of books, periodicals, or newspapers. The difficulty of establishing these technologies in underdeveloped nations like Nigeria is made more difficult by the necessity for power, physical space, and connectivity concerns. Striking a balance between economic realities and educational goals is one of Nigeria's main challenges when implementing ICT in education (Kwasha, 2007). Significant capital investments are required for ICT integration in education projects to result in uniformly high-quality education at the college level. It is impossible to overstate the importance of integrating ICT into colleges of education because all disciplines, regardless of college ownership, call for the usage of ICT.

College of education are the institutions that are established primarily to train students to become teachers and lecturers. They are the institutions that award Nigerian Certificate in Education (NCE) for students. Most of the colleges of education in Nigeria do not use ICT in teaching pedagogy; this could be due to lack of knowledge of its benefit and also lack of availability of the tool and manpower to man its operation.

College ownership is the variable of interest in the level of ICT needs among pre-service teachers in colleges of education to be examined. Level of ICT needs among pre-service teachers in colleges of education may be influenced by the ownership of the college, whether federal, state or private. Public ownership of colleges, or government ownership, is one owned by government (state or federal). Moreover, it might be privately held by people, groups, or authorities. Decrees or Acts of Parliament are used to create Federal and State Colleges of Education. Depending on who controls the college, level of ICT needs may vary. This syndrome has the potential to affect level of ICT needs across different colleges of education. Generally, it is assumed that federal institutions are more equipped with ICT facilities but some state institutions however seemed to be more equipped with ICT facilities (Aladejana, 2007). Similarly, some state college of education

lecturers had access to them than their counterparts in federal colleges. The study carried out by Aladejana (2007) also revealed that there is no section in the Nigerian National Policy on Education that specified teachers to carry out computer-assisted learning or make it mandatory for school proprietors to deploy the necessary ICT facilities. Thus, some stakeholders in the school system do not see its implementation as a priority as there are no well-secured, appropriate room spaces to keep the computers.

Despite significant investments in ICT over the last decade by government, many tertiary institutions still lack ICT facilities (Badau & Sakiyo, 2013). Badau & Sakiyo (2013) equally stated that colleges of education seem ill-prepared for technological transformation and are unmotivated to experience innovation. What is worrisome is that limited studies have focused on technology needs assessments particularly on influence of college ownership on student-teachers' ICT needs in colleges of education. Though, technology infusion into instruction is contingent upon several factors, including availability of technology, teacher competence, funding, support, professional development and training.

In their list of examples of ICT tools, Akuegwu, Ntukidem, Ntukidem, and Jaga (2011) included items like computers, laptops, video equipment, multi-media projectors or power points, digital cameras, internet access, computer networks, telephones (GSM and landlines), e-books, television programs, and databases. According to Egomo et al. (2012), ICT offers a variety of instruments to assist and enhance teachers' professional competence. ICT alters instruction and makes teachers more effective and efficient, which raises teachers' interest in their work. ICTs allow teachers to place a greater emphasis on personalised instruction and, as a result, spend more time with each student individually. As a result, students complete more independent work, and the teacher has more time to devote to educating students about higher-level subjects.

The society needs a contemporary approach to teaching and learning at this time when students are losing interest in learning and teachers are no longer dedicated to their craft, so that academic achievement in science can increase across all institutions. We can only gain from these new advancements when we are connected to the global community via ICT. Science is dynamic, with new discoveries in science and teaching methods emerging every day (Awolaju, Akinloye & Ilorin; 2010). In addition, there were few

investigations examining the impact of college ownership on pre-service teachers' level of ICT needs in colleges of education, and the vast majority of the papers the researcher had access to were centered on the pre-service teachers' gender and area of specialization. If there isn't a continuous assessment of level of ICT needs and there isn't enough data from research on the level of ICT Needs of pre-service teachers, many colleges of education can choose the wrong ICT facilities for those students. This is the gap that the study is trying to fill. Consequently, it is crucial to investigate how ownership influences the level of ICT needs for pre-service teachers in North-Central colleges of education.

Therefore, based on the six UNESCO ICT-CFT domains of understanding ICT in education, curriculum and assessment, pedagogy, ICT, organization and administration, and teacher professional learning at the Technology Literacy approach, this study examined the influence of ownership on pre-service teachers' level of ICT needs. The justification for utilizing the UNESCO ICT-CFT (UNESCO, 2018) in this study is that it is a framework that describes the competences that teachers need to incorporate ICT into their professional activity. The questionnaire's items were based on the six levels of the UNESCO ICT-technology CFT's literacy framework.

Purpose of the Study

The study's major objective was to determine level of pre-service teachers' ICT needs in colleges of education in north central Nigeria as influenced by ownership. The study specifically examined level of ICT needs of pre-service teachers in north central Nigeria based on the Technology Literacy approach of UNESCO ICT-CFT in:
  i.   understanding ICT in education as influenced by ownership.
  ii. curriculum and assessment   as influenced by ownership.
  iii. pedagogy as influenced ownership.
  iv. ICT integration as influenced by ownership.
  v.   organization and administration as influenced by ownership.
  vi. professional learning as influenced by ownership.

Research Questions
Answers were provided to the following questions:

i. Does ownership influence pre-service teachers' level of ICT needs in understanding ICT in education based on the Technology Literacy approach of UNESCO ICT-CFT?

ii. Does ownership influence pre-service teachers' level of ICT needs in curriculum and assessment based on the Technology Literacy approach of UNESCO ICT-CFT?

iii. Does ownership influence pre-service teachers' level of ICT needs in pedagogy based on the Technology Literacy approach of UNESCO ICT-CFT?

iv. Does ownership influence pre-service teachers' level of ICT needs in ICT integration based on the Technology Literacy approach of UNESCO ICT-CFT?

v. Does ownership influence pre-service teachers' level of ICT needs in organization and administration based on the Technology Literacy approach of UNESCO ICT-CFT?

vi. Does ownership influence pre-service teachers' level of ICT needs in their professional learning based on the Technology Literacy approach of UNESCO ICT-CFT?

Research Hypotheses

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

Ho_1: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in understanding ICT in education based on the Technology Literacy approach of UNESCO ICT-CFT.

Ho_2: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in curriculum and assessment based on the Technology Literacy approach of UNESCO ICT-CFT.

Ho_3: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in pedagogy based on the Technology Literacy approach of UNESCO ICT-CFT.

Ho_4: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in ICT integration based on the Technology Literacy approach of UNESCO ICT-CFT.

Ho$_5$:   There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in organization and administration based on the Technology Literacy approach of UNESCO ICT-CFT.

Ho$_6$:   There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in their professional learning based on the Technology Literacy approach of UNESCO ICT-CFT.

Methodology

Descriptive research of the survey type was used in this study. The method enables the researcher to assess the ownership influence of pre-service teachers' varied ideas and opinions on the level of ICT needs at colleges of education in north central, Nigeria. Pre-service teachers in Nigerian colleges of education made up the study's population, and the study's target demographic was pre-service teachers in Nigeria's north-central states. Nine private colleges of education, ten state colleges of education, and four federal colleges of education made up the 23 colleges of education from which the sample was selected. 11 colleges of education were chosen at random from the zone because they were all created by the same Decree and adhere to the same basic standards. The pre-service teachers who had completed practice teaching in their third year of study (NCE 3) made up the sample size. Federal College of Education, Kotangora; Nasarawa State College of Education, Akwanga; Kogi State College of Education, Ankpa; Federal College of Education, Okene; Benue State College of Education, Katsina-Ala; Benue State College of Education, Oju; Federal College of Education, Pankshin; Nigeria Army School of Education, Sobi Cantonment, Ilorin; and Kwara State College of Education were the colleges of education that were sample.

Pre-service teachers in the sample were stratified along college ownership (Federal and State). Random sampling technique was also used to select the 1,360 pre-service teachers involved in the study. The research instrument used in this study was adapted from UNESCO ICT-CFT (UNESCO, 2018) titled "Student-Teachers ICT Needs in Colleges of Education" (STICTNCOE). The items on the questionnaire were based on the six levels of UNESCO ICT-CFT (UNESCO, 2018) at the Technology Literacy approach. The questionnaire was made up of seven sections labelled Sections A, B, C, D, E, F and G. Section A dealt with the pre-service teachers' bio- data containing

information on the respondents' institution and college ownership. Five items on the level of ICT needs in understanding among pre-service teachers were included in Section B. Respondents were asked to indicate their level of ICT need as either very high level of need, high level of need, moderate level of need, low level of need, or no need at all. The pre-service teachers' level of ICT needs in curriculum and assessment were covered by 15 items in section C, with the same response format as in section B. Ten items in Section D with the same type of response as in Section B related to the extent of ICT needs in pedagogy for pre-service teachers. Section E dealt with the pre-service teachers' level of ICT integration needs. Ten items on the level of ICT needs for organization and administration for pre-service teachers were in Section F. While section G featured eight items on pre-service teachers' level of ICT Needs in teacher professional learning with response modes similar to section B.

Three lecturers in the department of Educational Technology at the University of Ilorin in Ilorin and a computer technology specialist at the STEP-B Project of the Federal College of Education in Okene each received a copy of the questionnaire to verify its face and content validity. They carefully examined the questionnaire to make sure it covered the scope of the investigation. The draft questionnaires were revised as a result of all the advice, recommendations, comments, and suggestions. In the Federal College of Education in Zaria, the instrument was pilot tested on 20 pre-service teachers. The reliability of the questionnaires was verified using the Cronbach Alpha. The survey items' reliability was 0.86 at a significance level of 0.05.

The researcher and two research assistants requested approval from the administrators of the sampled colleges for the study. The researcher and research assistants, who were employees of some of the colleges of education, distributed copies of the questionnaire. Through the use of phone calls, the researcher was able to appropriately oversee the research assistants. 1,211 of the 1,360 copies of the questionnaire that were sent were returned, representing an 89.04% return rate. The 1,211 returned copies of the survey were used for the analysis. The Statistical Science Package for Social Sciences (SPSS) version 23.0 for Windows was used to code and analyze the questionnaires. The research questions were all analyzed using the mean, and the t-test was utilized to the six (6) hypotheses.

Results

Table 1: Percentage distribution of respondents by college ownership

Proprietor	Frequency	Percentage
Federal	552	45.60
State	659	54.40
Total	1,211	100.00

Table 1 reveals that 552 (45.6%) of the respondents were from the federal colleges of education selected for the study while 659 (54.4%) of the respondents were from the state colleges of education.

Research Questions

Table 2: Assessment of level of ICT needs among pre-service teachers in Colleges of Education in North Central Nigeria as influenced by college ownership based on the Technology Literacy approach of UNESCO ICT-CFT

S/N	Items	Federal Mean	State Mean
1.	Level of Understanding ICT in Education	2.22	2.03
2.	Level of ICT Needs in Curriculum and Assessment	2.28	2.48
3.	Level of ICT Needs in Pedagogy	2.10	2.40
4.	Level of ICT Needs in ICT Integration	2.22	2.71
5.	Level of ICT Needs in Organization and Administration	2.17	2.27
6	Level of ICT Needs in Professional Learning	2.23	2.37
	Grand Mean	**2.20**	**2.38**

According to Table 2, the grand mean rating for federal and state colleges of education pre-service teachers' ICT needs as influenced by ownership was 2.20 and 2.38 based on the six levels of the UNESCO ICT- CFT at the Technology Literacy approach. This outcomes show that ownership had no influence on pre-service teachers' level of ICT needs at colleges of education using a standard of 3.00.

Hypotheses Testing

Hypothesis One: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in understanding ICT in education based on the Technology Literacy approach of UNESCO ICT-CFT.

Table 3: Pre-service teachers' level of ICT needs in Understanding ICT in Education as influenced by college ownership

School	N	Mean	SD	df	t	Sig (2tailed)
Federal	552	19.97	3.52			
				1209	0.02	0.98
State	659	19.98	3.52			

The t-test for the level of ICT needs in understanding ICT in education for pre-service teachers in the federal and state colleges of education is shown in Table 3. Pre-service teachers from the State college of education mean rating (M =19.98, SD 3.52) and the Federal college of education (M =19.97, SD 3.52) are not significantly different from one another, t (1209) = 0.02, p = 0.98. Hence, based on the Technology Literacy approach of UNESCO ICT-CFT, there was no significant differences between federal and state colleges of education pre-service teachers' level of ICT needs in understanding ICT in education. Thus, hypothesis had to be accepted as a result of this.

Hypothesis Two: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in curriculum and assessment based on the Technology Literacy approach of UNESCO ICT-CFT.

Table 4: Pre-service teachers' level of ICT Needs in Curriculum and Assessment as influenced by college ownership

School	N	Mean	SD	df	t	Sig (2tailed)
Federal	552	58.67	7.66			
				1209	0.04	0.97
State	659	58.68	7.66			

The level of ICT needs in curriculum and assessment for pre-service teachers at federal and state colleges of education is shown in Table 4 using a t-test. Pre-service teachers mean rating of the Federal College of Education (M =58.68, SD 7.66) and State College of Education (M =58.68, SD 7.66) do not differ substantially from one another; t (1209) = 0.04; p = 0.97. Hence, based on the Technology Literacy approach of UNESCO ICT-CFT, there was no significant differences between federal and state college of education pre-service teachers' level of ICT needs in curriculum and evaluation. This made accepting the hypothesis necessary.

Hypothesis Three: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in pedagogy based on the Technology Literacy approach of UNESCO ICT-CFT.

Table 5: Pre-service teachers Level of ICT Needs in Pedagogy as influenced by college ownership

School	N	Mean	SD	df	t	Sig (2tailed)
Federal	552	38.42	5.73			
				1209	0.10	1 .00
State	659	38.32	5.72			

The level of ICT needs for pedagogy for pre-service teachers at federal and state colleges of education is shown in Table 5 by t-test. There is no significant difference in the mean ratings of pre-service teachers from Federal colleges of education (M =38.42, SD 5.73), and State colleges of education (M =38.32, SD 5.72). Hence, based on the Technology Literacy approach of UNESCO ICT-CFT, there was no significant differences in the level of ICT needs among pre-service teachers from federal and state colleges of education for pedagogy. The hypothesis had to be accepted as a result of this.

Hypothesis Four: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in ICT integration based on the Technology Literacy approach of UNESCO ICT-CFT.

Table 6: Pre-service teachers Level of ICT needs in ICT integration as influenced by college ownership

School	N	Mean	SD	df	t	Sig (2tailed)
Federal	552	310.74	38.06			
				1209	0.02	0.55
State	659	310.79	38.05			

The level of ICT needs in the integration of ICT for pre-service teachers at federal and state colleges of education is shown in Table 6 using a t-test. Pre-service teachers mean rating from Federal colleges of education (M = 310.74, SD 38.06) and State colleges of education (M = 310.79, SD 38.05) do not differ significantly from one another, according to t (1209) = 0.02 and p = 0.55. Hence, based on the Technology Literacy approach of UNESCO ICT-CFT, there was no significant differences in the level of ICT needs in ICT integration for federal and state college of education pre-service teachers. This made accepting the hypothesis necessary.

Hypothesis Five: There are no significant differences among Pre-service teachers in federal and state colleges of education level of ICT needs in organization and administration based on the Technology Literacy approach of UNESCO ICT-CFT.

Table 7: Pre-service teachers Level of ICT Needs in Organization and Administration as influenced by college ownership

School	N	Mean	SD	df	t	Sig (2tailed)
Federal	552	39.11	6.34			
				1209	0.12	0 .98
State	659	39.12	6.35			

The level of ICT needs for organization and administration is shown in Table 7 for pre-service teachers at federal and state colleges of education. Pre-service teachers from Federal colleges of education with a mean rating of (M =39.11, SD 6.34) and those from State colleges of education with (M =39.35, SD 6.35) do not significantly differ from one another, according to t (1209) = 0.12, p = 0.98. Hence, based on the Technology Literacy approach of UNESCO ICT-CFT, there was no significant differences between federal and state colleges of education pre-service teachers' level of ICT needs in organization and administration. This made accepting the hypothesis necessary.

Hypothesis Six: There are no significant differences among pre-service teachers in federal and state colleges of education level of ICT needs in their professional learning based on the Technology Literacy approach of UNESCO ICT-CFT.

Table 8: Pre-service teachers Level of ICT needs in their professional learning as influenced by college ownership

School	N	Mean	SD	df	t	Sig (2tailed)
Federal	552	32.03	5.21			
				1209	0.12	0 .99
State	659	32.02	5.22			

The level of ICT needs for pre-service teachers at federal and state colleges of education is shown in Table 8 for their professional development. The mean ratings for pre-service teachers in Federal colleges of education (M =32.03, SD 5.21) and State colleges of education (M =32.02, SD 5.22) are not significantly different from one another; t (1209) = 0.12, p = 0.99. As a result, there was no significantly differences in the level of ICT needs among pre-service teachers from federal and state colleges of

education while using the UNESCO ICT- CFT's Technology Literacy approach to professional learning. The hypothesis had to be accepted as a result of this.

Table 9: Summary of Pre-service teachers' level of ICT Needs on the Six Levels of UNESCO ICT-CFT at the Technology Literacy Approach Based as influenced by college ownership

School	N	Mean	SD	df	t	Sig (2tailed)
Federal	552.00	442.06	48.43			
				1209	0.26	0 .98
State	659.00	442.14	48.47			

Based on the Technology Literacy approach of the UNESCO ICT-CFT, Table 9 shows the t-test for pre-service teachers' level of ICT needs in federal and state colleges of education. The mean ratings for pre-service teachers at federal colleges of education (M =442.06, SD 48.43) and state colleges of education (M =442.14, SD 48.47) did not differ significantly (t (1209.00) = 0.26, p = 0.98). Hence, based on the Technology Literacy approach of the six levels of UNESCO ICT-CFT, there was no significant difference between federal and state college of education pre-service teachers' level of ICT Needs in Colleges of Education. This necessitated that all six hypotheses be accepted.

Summary of Findings

Based on the Technology Literacy approach of UNESCO ICT-CFT:

1. With a benchmark of 3.00, college ownership had no influence on the ICT needs of pre-service teachers in colleges of education.

2. There were no significant differences between federal and state colleges of education pre-service teachers' level of ICT needs in:
   a. understanding ICT in education.
   b. curriculum and evaluation
   c. pedagogy
   d. ICT integration
   e. organization and administration
   f. professional development

Discussions of findings

The descriptive results from this research demonstrated that ownership had no bearing on the level of ICT needs of pre-service teachers at colleges of education. Also, the inferential results showed no differences in the ownership of pre-service teachers' level of ICT needs in technology literacy approach of the six levels of UNESCO ICT-CFT in colleges of education. This finding attested to the fact that if a teacher wants to be relevant in the 21st century, he/she must be ICT literate. No college of education wants to be left behind irrespective of college ownership.

Therefore, there were no significant differences in pre-service teachers' college ownership on their level of ICT Needs in the technology literacy of the six levels of UNESCO ICT-CFT. This investigation shows that pre-service teachers in education colleges in north central, Nigeria had the same level of ICT needs, regardless of ownership. These results were supported by research on how pre-service teachers typically view the use of ICT as a learning aid (Kumar and Tammlin, 2008). Regardless of who owns the colleges of education, there have been no recorded negative pre-service teacher assessments about the level of ICT needs. This implies that pre-service teachers are aware of the importance of ICT in the teaching-learning process and in their professional calling irrespective of college ownership.

However, a common mistake in many colleges of education is trying to compensate lack of needs assessment by extensive usage of the few ICT facilities available (computer). It is therefore not enough to equip colleges of education with computers and train teachers in their use to prepare pre-service teachers for the demands of the 21st century; ICT in itself is not going to radically change the education system for the better. It has been noted that there are no tools available to evaluate educational needs, and ICT is not the answer to a wide range of educational issues. Yet if ICT is going to be used in colleges of education, it needs to take pre-service teachers' requirements into consideration. So, it is argued that the level of ICT needs of pre-service teachers may not always be determined by ownership.

Many colleges of education that are keen to integrate ICT may be "putting the cart before the horse" when they purchase and install new ICT without conducting needs assessments of pre-service teachers. In taking decisions to acquire ICT, it is important

that policy makers have an understanding of ICT as the most effective tool for pre-service teachers to integrate into their training. Colleges of education too must also have the resources and capacity to manage the ICT effectively and efficiently before they purchased and installed them. Without pre-service teachers' ICT Needs assessments, colleges of education may not have the necessary information for making decisions on the type of ICT facilities to procure for pre-service teachers' utilisation in the colleges.

Conclusions

Ownership has no influence on the level of ICT needs of pre-service teachers in Nigeria's north central colleges of education. A sufficient level of teacher professionalization is a requirement to transform education in such a way that teachers have the technological and pedagogical knowledge and skills to use ICT to cater to pre-service teachers' individual preferences. Colleges of education are under pressure to use ICT to equip future teachers with the knowledge and skills to prepare them for the 21st century. As a result, colleges of education should prepare pre-service teachers on the use of ICT facilities in their chosen career based on their identified needs. Finally, this study found no discrepancy between the ICT competency standards for teachers set by UNESCO, level of ICT needs of pre-service teachers in colleges of education, and the results attained by colleges of education in Nigeria in general and the North-central in particular.

Recommendations

Based on the findings of the study, it was recommended that:

1. All colleges of education should be made beneficiaries of ICT projects, federal, state or private from designated agencies such as Tertiary Education Trust Fund (Tetfund).

2. Government either state or federal should ensure that pre-service teachers are provided with ICT needs they needed to function effectively in their chosen profession.

3. Provisions of ICT faculties to colleges of education by the authorized Agencies should be guided by the findings of this study

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