PRE-SERVICE TEACHERS' ATTITUDE TOWARDS APPLICATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AS A PEDAGOGICAL TOOL IN TEACHER EDUCATION

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ABSTRACT: *The study investigated pre-service teachers' attitude towards application of Information and Communication Technology (ICT) as a pedagogical tool in teacher education. A sample of 365 of pre-service teachers of Alvan Ikoku Federal College of Education, Owerri, Imo State, Nigeria was used for the study. The descriptive survey research design was adopted in carrying out the study. A 4-point type of questionnaire titled "Pre-service Teachers' Attitude towards ICT Application Scale (PSTAICTAS)" was used to generate data. It had reliability coefficient (r) of .76 determined using Pearson's product moments correlation coefficient formula. The data generated was analyzed using mean and standard deviation to answer the research question while the hypothesis was tested using t-test statistical tool at 0.05 level of significance. The result of the study revealed that pre-service teachers had positive attitude towards ICT as a pedagogical tool irrespective of their gender. Based on the findings, it was recommended that educators in teacher training institutions should apply ICT tools in their lecture delivery to enable pre-service teachers benefit from it.*

KEYWORD: Pre-Service Teachers, Attitude, ICT, Pedagogical Tool, Teacher Education.

INTRODUCTION

Teaching activity is one of the numerous professions that are faced with challenges as a result of the dynamic nature of the society. Intending teachers and teachers need help either through pre-service or in-service teacher education programmes to develop their content knowledge, pedagogical skills or the realization of certain practices. Their success in teaching depends on their knowledge, attitude towards teaching, academic self-concept and explicit understanding of the profession. Teacher education provide teachers' knowledge, skills and aptitude to be familiar with the art and science of teaching that in turn gives them confidence to carry out their task (Ololube,2007). Teachers being the pivot in the teaching- learning process, requires the knowledge of Information and Communication Technology (ICT) and skills to use it in teaching and learning in today's classroom

Information and Communication Technology (ICT) has galvanized the education system and brought more challenges to the teachers. Daniels (2007) noted that ICTs have become within a

short time, one of the basic building blocks of modern society. Agreeing with that, Pernia (2008) defined Information and Communication Technology (ICT) as technologies used to communicate in order to create, manage and distribute information which includes computers, the internet, telephone, television, radio and audio-visual equipment. United Nations Report (1999) indicated that ICTs cover internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network-based information services and other related information and communication activities. Olugbenga and Adebayo (2010) defined ICT as collection, retrieval, use and storage and communicating information through the use of computers and micro electronic system, ICT is seen as a computer based tools and techniques for gathering and using information. It encompasses the hardware and software, the network and several other devices (video, audio, photographic camera, etc) that can convert information, images and sound into digital form. It includes electronic information in processing technologies such as computer and internet, as well as fixed-line telecommunication networks (Olaore, 2014).

ICTs are playing a leading role in the field of education as it has been in the forefront of resolving problem situations in education. Teaching and learning is gradually being transformed through ICT as pedagogical tools. Alzaidiyeen, Lai-mai and Fook (2010) noted that the new technologies have been recognized to play a valuable role in developing and improving the teaching and learning situations. According to Guma, Farugue and Khustri (2013), the use of ICT in the classroom teaching-learning process is very important for it provides opportunities for teachers and students to operate, store, manipulate and retrieve information, encourage independent and active learning and self-responsibility to learning such as distance learning, motivate teachers and students to continue learning outside school hours. The application of ICT as a pedagogical tool allows students to take control of the learning process, test conjectures, collaborate, generate and solve problems, increase motivation, study outside the classroom, engage in meaningful learning, develop critical thinking and evaluate their work. Morgan in Al-Zaidiyeen, Lai-Ma, and Fook (2010) claimed that when computers are used, there are many learning processes that are engaged such as

* gather information,
* teacher as facilitator,
* involvement in experimental learning,
* face-to-face communication,
* expanded creativity, and
* testing of new knowledge.

Jonassen and Reeves (1996) asserted that this versatile instrument has the capability not only of engaging students in instructional activities to increase their learning, but of helping them to solve complex problems to enhance their cognitive skills. Miller, Martineau and Clark (2000) asserted that, technology-based teaching may not be essential in all classes but generally it is most facilitative as a result of providing relevant examples and demonstration, changing the orientation of the classroom, preparing students to employment, increase flexibility of delivery, increasing access and satisfying public demands for efficiency.

Students using ICTs for learning purposes become immersed in the process of learning and as more and more students use computers as information sources and cognitive tools (Reeves & Jonassen,1996). Achieving success in the application of ICT as a pedagogical tool is dependent on teachers' attitude as developed through the pre-service stage. Pre-service teachers who accept ICT tools in the classroom are most likely to apply them during practice. According to Cuckle and Clarke (2007) a lack of ICT pedagogical training at teacher training colleges constitutes a barrier to using ICT in the classrooms and although individual ICT skills might be high for personal use, the transfer of these skills to the classroom environment may become problematic as a result of the teachers attitude towards their usage.

Allport in Haji (2015) defined attitude as 'a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. Gankon (1998) saw it as inclinations and feelings, prejudices or bias, preconceived notions, ideas, fears and convictions about any specific situation or topic. Attitude is a construct that is used to describe the behavior of an individual towards a particular situation. Fishbein in Al-Zaidiyeen et al (2010) defined attitude as a learned predisposition to respond to an object or class of objects in a consistently favourable or unfavourable way. Wenden (1998) defines attitudes as learned motivations, valued beliefs, evaluations, what one believes is acceptable, or responses oriented toward approaching or avoiding, which implies that attitudes are form of meta-cognitive knowledge. If pre-service teachers are of positive attitudes towards the classroom use of educational technological tools then they can be courageous in the integration of the ICT tools in the teaching and learning process when fully in practice. Pre-service teachers who regard and understand the importance of ICT tools in education will frequently glue to it in their classroom practices. Teachers' attitude towards the application of ICT tools in the teaching and learning process will also affect attitude of the students. If teachers show positive attitude towards ICT then they can easily provide useful insights about acceptance and usage of ICT in teaching for students. Teo (2006) stated that success of student learning in using ICT depends largely on teachers' attitude towards ICT. Teachers who are of negative attitude towards ICT transmit same to the students and teachers with positive attitudes influence the students in positive direction of applying technology in their classrooms. The teachers' existing attitudes; skills and working habits will have great influence on their acceptance, style of implementation and outcome of using computers for teaching (Al-Zaidiyeen et al 2010; Summers, 1990).

Attitudes can be changed through the provision of new information to those concerned because their negative or positive attitudes may have been based on incomplete information (Ian, 2003). Grimus (2000) pointed out that, by teaching ICT skills in higher institutions the students are prepared to face future development based on proper understanding. The application of ICT tools in education can help the teachers and students to acquire the needed skills and competencies to function in today's society.

Statement of the Problem

The application of Information and Communication Technology (ICT) as pedagogical tool in teaching is changing the learning situations in higher institutions today. The success of ICT classroom implementation depends on pre-service teachers' acceptance of its benefits which is shown in their attitude and many studies indicate that not all pre-service teachers welcome the application of ICT as a pedagogical tool. Based on this premise, this study was carried out to determine pre-service teachers' attitude towards application of information and communication technology (ICT) as a pedagogical tool in teacher education.

Purpose of the Study

The main purpose of this study was to investigate pre-service teachers' attitude towards application of information and communication technology (ICT) as a pedagogical tool in teacher education in higher institutions. Specifically, the study sought to determine:

1. Pre-service teachers' attitude towards the application of ICT as a pedagogical tool.

2. If gender determines pre-service teachers' attitude towards application of ICT as a pedagogical tool in teacher education.

Research Question

The following research question guided the study:

1. What is pre-service teachers' attitude towards application of ICT as a pedagogical tool in teacher education?

2. What is the difference between male and female pre-service teachers' attitude towards application of ICT as a pedagogical tool in teacher education?

Hypothesis

This hypothesis was formulated for the study:

$H0_1$: There is no significant difference between male and female pre-service teachers' attitude towards the application of ICT as a pedagogical tool in teacher education.

METHODOLOGY

The descriptive survey research design was adopted in investigating the attitude of pre-service teachers towards application of information and communication technology (ICT) as a pedagogical tool in teacher education. The population of the study consisted of 1,666 degree programme 400 level pre-service teachers of Alvan Ikoku Federal College of Education, Owerri, Imo State. Stratified random sampling technique was used to draw a sample of three hundred and sixty five (365) pre-service teachers for the study consisting of 200 females and 165 males. The instrument for data collection was a researchers' structured 20 item modified likert-point type of questionnaire titled "Pre-service Teachers' Attitude towards ICT Application Scale (PSTAICTAS)". It was divided into 2 sections; Section A dealt with respondents demographic variables while Section B dealt with items related with the objectives of the study with responses ranging from Strongly Agree (SA) = 4 points, Agree (A) = 3 points, Disagree (D) = 2 points to Strongly Disagree (SD) = 1 point. The face validity of the instrument was decided by two teacher educators and a measurement and evaluation expert, their expert judgments guided the restructuring of the instrument. To determine the reliability of the instrument, the test-retest method was applied to administer it twice within two weeks to 35 pre-service teachers outside the study sample with the same characteristics. The data generated was analyzed using Pearson's product moment correlation coefficient formula; this gave a reliability coefficient (r) of.76 which was acceptable for the study. The instrument was administered to the respondents on face-to-face basis by the researchers through the assistance of various course leaders. They were briefed on the purpose of study and assured that any information given will be used for the research purpose only. The instrument was collected on

the spot after they filled them and all the distributed instrument was returned by the respondents. The data generated were analyzed using mean and standard deviation to answer the research questions, any response mean within and above the criterion mean of 2.50 was accepted while below was rejected. The hypothesis was tested using t-test statistical tool at 0.05 level of significance.

RESULT

Research Question 1: What is pre-service teachers' attitude towards application of ICT as a pedagogical tool in teacher education?

Table 1: Summary of pre-service teachers' responses

S/N	Items	Aver. Mean	SD	Dec.
1.	Lecture with ICT tool is interesting.	3.30	0.08	Accept
2.	Use of ICT tools improves learning.	3.25	0.60	,,
3.	ICTs in classroom make teaching and learning lively.	3.11	0.70	,,
4.	It is easy to learn with ICTs.	3.02	0.77	,,
5.	ICT tools enables access to learning materials.	3.29	0.65	,,
6.	ICTs enables access to innovations in teaching and learning.	2.88	0.70	,,
7.	ICTs create an effective learning atmosphere.	2.89	0.84	,,
8.	ICTs enable access to materials for assignments.	3.33	0.56	,,
9.	I like attending classes when ICT tools are used.	3.12	0.64	,,
10.	ICTs help me organize my work.	2.89	0.83	,,
11.	I understand more when ICT are used in the classroom.	2.78	0.88	,,
12.	ICT allows me to share ideas with others within and outside classroom.	3.04	0.68	,,
13.	I enjoy learning with ICT tools.	3.28	0.61	,,
14.	Use of ICTs in learning gives flexibility to learning.	2.74	0.85	,,
15.	Use of ICTs in classroom enable me have immediate feedback.	2.84	0.76	,,
16.	Using ICTs in classroom learning makes me confident.	3.19	0.61	,,
17.	ICTs enable variety of solutions to problem situations.	2.70	0.97	,,
18.	Use of ICT motivates me to study outside classroom.	3.19	0.62	,,
19.	I gain sufficient knowledge in class when ICTs are used.	2.94	0.75	,,
20.	I prefer ICTs in teaching and learning than traditional approach.	3.29	0.60	,,
	Grand Mean	**3.05**	**0.72**	

Table 1 shows that all the attitudinal statements had response mean above the instrument scale mean of 2.50 hence, they were all accepted. Also, the average mean of the responses is 3.05 which is above the scale mean which indicates a high positive attitude among pre-service teachers.

Research Question 2: What is the difference between male and female pre-service teachers' attitude towards application of ICT as a pedagogical tool in teacher education?

Table 2: Summary of gender mean responses

Gender	N	Mean $\bar{x}$	SD	Diff in Mean $\bar{x}$
Male	165	3.07	0.69	
Female	200	3.04	0.72	0.03

Table 2 shows that male pre-service teachers had response of mean of 3.07 while their female counter parts had 3.04; these gave a difference in response mean of 0.03 in favour of the males pre-service teachers.

H0₁: There is no significant difference between male and female pre-service teachers' attitude towards application of ICT as a pedagogical tool in teacher education.

Table 3: Summary of t-test analysis of pre-service teachers' responses

Gender	N	Mean $\bar{x}$	SD	DF	t-cal	t-cal	Remarks
Male	165	3.07	0.69				NS
Female	200	3.04	0.72	363	0.375	1.96	

Table 3 shows that t-calculated value 0.375 is less than the table value at 1.96 at degree of freedom 363 and 0.05 level of significance. Based on the result, the null hypothesis was upheld indicating no significant difference between the attitude of male and female pre-service teachers towards application of ICT as a pedagogical tool in teacher education.

DISCUSSION

The result of the study revealed that all indicated attitude items on the questionnaire had mean responses greater than the instrument scale mean and were all accepted as attitude factors. Also, the average response mean indicated a high positive attitude among pre-service teachers towards application of ICT as a pedagogical tool in teacher education. The positive attitude among pre-service teachers may have emanated from the academic benefits they desire from the ICT tools throughout their training process. This result is in line with the findings of Sanchez, Marcos, Gonzalez and Guanlin (2012) which indicated that pre-service teachers had positive attitudes with regards to the use of ICT as teaching tools and Sinisek (2008) which revealed that majority of students accepted the use of ICT for learning and they maintained positive attitudes towards using ICT.

The study also revealed that gender was not a barrier to pre-service teachers' attitude towards application of ICT as a pedagogical tool in teacher education. Further analysis of male and female pre-service teachers mean responses showed no significant difference between male and female pre-service teachers attitude towards application of ICT as a pedagogical tool. This result is in disagreement with Kubratko (2010) which revealed that males have more positive attitude towards ICT as compared to females.

CONCLUSION

The result of the study revealed that pre-service teachers are of positive attitudes towards the application of ICT as a pedagogical tool in teacher education. The study indicated that gender was not a barrier to pre-service teachers' attitude towards application of ICT in teaching and learning.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

1. Educators in teacher training institutions should be mandated to apply ICT tools in their lecture delivery to enable pre-service teachers acquire the knowledge of its use.

2. Educators in teacher training institutions should upgrade their ICT competence through attending conferences, seminars and in-service trainings to be able to apply them in their classrooms.

3. The Government should make ICT tools available in teacher education institutions to enable educators and pre-service educators use them in teaching and learning process.

4. Teacher training institutions should organize seminars and workshops to beef-up the knowledge, change in attitude and enhance the use of ICT materials among their teaching staff, teacher aids (such as laboratory technologist/attendants) and non-teaching staff.

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