Attitudes of Academic Staff towards the Use of Information Communication Technology as a Pedagogical Tool for Effective Teaching in FCT College of Education, Zuba-Abuja, Nigeria

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Abstract—With numerous advantages of ICT in teaching such as using images to improve the retentive memory of students, academic staff is yet to deliver instructions adequately and effectively due to no power supply, lack of technical supports and non-availability of functional ICT tools. This study was conducted to investigate the attitudes of academic staff towards the use of information communication technology as a pedagogical tool for effective teaching in FCT College of Education, Zuba-Abuja, Nigeria. A sample of 200 academic staff from five schools/faculties was involved in the study. The respondents were selected by using simple random sampling technique (SRST). A questionnaire was developed and validated by the experts in Measurement and Evaluation, and reliability co-efficient of 0.85 was obtained. It was used to gather relevant data from the respondents. This study revealed that the respondents had positive attitudes towards the use of ICT as a pedagogical tool for effective teaching. Also, the uses of ICT by the academic staff included: to encourage closer relationship for attainment of higher academic, and to deliver instructions effectively. The study also revealed that there is a significant relationship between the attitudes and the uses of ICT by the academic staff. Based on these findings, some recommendations were made which include: power supply should be provided to operate ICT facilities for effective teaching, and technical assistance on ICT usage for effective delivery of instructions should be provided among other recommendations.

Keywords—Academic staff, attitudes, information communication technology, pedagogical tool, teaching and use.

I. INTRODUCTION

AN attitude is a state of mental readiness to response to all objects and situations to which it is correlated. In a simple definition, according to [1], an attitude is a mind-set to act in a particular way due to both an individual's experience and temperament. Therefore, a person's attitudes explain his or her behaviour or reaction to objects or situation. Attitudes are characterised by individual temperament, philosophies, values, behaviours, and enthusiasms [1]. It is assumed in social psychology that an individual's personal evaluations are more informative of the person's attitude than what she/he claims to do [2]. Reference [3] defined attitudes as "favourable or unfavourable evaluations of/and reactions to objects, people, situations, or any other aspects of the world."

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Attitudes have the capability to influence how a man reacts to objects, circumstances, products, and individuals in his environment [3].

The advantages of Information and Communication Technology (ICT) tools in education include using images in teaching to improve the retentive memory of students, teachers can easily explain complex instructions and ensure students' comprehension, and teachers are able to create interactive classes and make the lessons more enjoyable, which could improve student attendance and concentration. The disadvantages of ICT tools in education include setting up the devices can be very troublesome, can be too expensive to afford, as well as difficult for teachers to use due to a lack of experience using ICT tools.However, a number of factors have been highlighted in literature of [14] as problems to ICT integration in teaching and learning. These problems include, but are not limited to lack of follow up for new skills, technical faults with ICT equipment, lack of time for training and the use of ICTs, lack of differentiated training programmes, lack of technical support, lack of appropriate software and lack of competence to use ICT. The study by [4] found that some academics still show a reluctance to have interaction with ICTs in teaching and learning processes; others suggest they are afraid of attempting new approaches with the belief that the introduction and application of ICT may have a negative impact on examination results. The use of technology to support learning and teaching has been perceived as risky ways for a few academics and that they prefer to continue using traditional teaching strategies that they believe alter them to predict and manage outcomes more easily.

Reference [5] on ICT in A-level Physics educating and learning at auxiliary schools in Manicaland Zimbabwe found the nonappearance of good cases of the best practice in the utilization of ICT in showing physical science, as there were a couple of educators who even recalled when they wrote notes for understudies or hunted down old examination papers. He discovered material science educators utilizing conventional instructional techniques, principally the address strategy and note transcription. This infers ICT is not successfully utilized as an instructive device as a part of educating.

In the other review of [4] on experiences into inventive classroom rehearses with ICT in China, it was found that ICT was not a basic device to change instructing and learning. It

ought to be noticed that ICT as an educational instrument includes the utilization of programming applications to take care of issues, to develop understudy abilities, to enhance communication and to impart each other with relevant knowledge [5]. There were different proofs which showed that some educators in secondary schools utilized ICT as instructional material, while others were cautious to utilize it.

The review by [12] on the incorporation of ICT in instructional method by auxiliary teachers in educating in New-Zealand, distinguished apparatuses, for example, the Internet, digital cameras, video, camcorders and video players as educational devices. The review found that these instruments were utilized as a part of educating; however, the most commonly utilized device was the Internet. Cameras were utilized just to make photograph and video of inquired about exercises. The review of [13] on educator views of ICT in secondary schools in Samoa uncovers the comparative discoveries that the web was generally utilized by instructors to search for data that would enhance delivery of instructions in the classroom.

II. STATEMENT OF THE PROBLEM

The roles of ICT in modern education cannot be over-emphasised. ICT has the capability to stimulate teachers' interest and students' towards teaching and learning. This stimulation results to higher academic performance. A research by [7] on the teachers' perceptions on the use of ICT in Tanzania found that the most commonly reported use of ICT for teaching included preparation for notes, teaching learning resources and examinations. Such level of ICT usage does not enable teachers to radically change their pedagogical practices and beliefs. However, to some academic staff, the use of ICT in teaching was a problem as students tended to concentrate too much on the computers without listening. It could be noted that teachers lack pedagogical skills in handling issues related to the use of ICT in the classroom due to a poor classroom environment [11].

The integration of ICTs at different levels of education is the most challenging in Nigeria. Many ICT facilities are either not functional or no power supply to operate them. With numerous advantages of ICT in teaching, academic staff is yet to deliver instructions adequately and effectively. Unfortunately, constrains for the ineffective use of ICT as a pedagogical tool have not been given attention through research. It is on this concern that a researcher investigated the attitudes of academic staff towards the use of information communication technology as a pedagogical tool for effective teaching in FCT College of Education, Zuba-Abuja, Nigeria.

III. RESEARCH QUESTIONS

The following questions were asked to guide in the conduct of this research:
1. What are the attitudes of academic staff towards the use of ICT as a pedagogical tool for effective teaching?
2. What are the uses of ICT by the academic staff for effective teaching?

3. What are the challenges facing the academic staff towards the use of ICT as a pedagogical tool for effective teaching?
4. What are the practical solutions to the challenges facing the academic staff towards the use of ICT as a pedagogical tool for effective teaching?

IV. HYPOTHESES

As follow-up to the research questions, the following hypotheses were postulated for this research:
H01. There is no significant difference between male and female respondents' attitudes towards the use of ICT as a pedagogical tool for effective teaching.
H02. There is no significant difference in the attitudes of academic staff towards the use of ICT as a pedagogical tool for effective teaching on the basis of schools/faculties.
H03. There is no significant relationship between the attitudes and the uses of ICT by the academic staff for effective teaching.

V. OBJECTIVES OF THE STUDY

The aim of this research is to investigate the attitudes of academic staff towards the use of ICT as a pedagogical tool for effective teaching. In addition, this study will achieve the following objectives:
1. To identify the uses of ICT by the academic staff for effective teaching.
2. To find out the challenges facing the academic staff towards the use of ICT as a pedagogical tool for effective teaching.
3. To examine the practical solutions to the challenges facing the academic staff towards the use of ICT as a pedagogical tool for effective teaching.
4. To investigate the difference between, if any, between male and female respondents' attitudes towards the use of ICT as a pedagogical tool for effective teaching.
5. To explore the difference, if any, in the attitudes of academic staff towards the use of ICT as a pedagogical tool for effective teaching on the basis of schools/faculties.
6. To examine the relationship, if any, between the attitudes and the uses of ICT by the academic staff for effective teaching.

VI. RESEARCH METHODOLOGY

The research methodology used for this study is discussed as follows:

A. Research Design

The research design for this study is descriptive survey design of the ex-post facto type. This is because the researcher will not be able to manipulate the variables for the simple reason that they have already occurred. The research design was adopted to enable the researcher to collect relevant data from the respondents with respect to the attitudes of academic

staff towards the use of information communication technology as a pedagogical tool for effective teaching in FCT College of Education, Zuba-Abuja, Nigeria.

B. Population of the Study

The population used for this study consists of academic staff of FCT College of Education, Zuba-Abuja, Nigeria. According to the information made available by the Establishment Unit of the College, there are five (5) Schools/Faculties. These five Schools and their respective population are: Arts and Social Sciences (47), Education (52), Languages (39), Sciences (61) and Vocational and Technical Education (43).

C. Sample and Sampling Techniques

In all the population, using SRST, 40 academic staff was selected from each faculty; therefore, the sample constituted a total of 200 respondents. This is made up male and female respondents.

D. Instrument for Data Collection

The instrument to be used for data collection was a questionnaire titled "Attitudes Scale Towards ICT Usage (ASTICTU)". The questionnaire was designed for academic staff. The instrument consisted two (2) sections: Section A was designed to obtain personal information about the respondent; Section B was divided into three categories to examine the attitudes, the challenges and the practical solutions to the challenges facing the academic staff towards the use of ICT as a pedagogical tool for effective teaching in FCT College of Education, Zuba-Abuja, Nigeria. The respondents were required to provide responses on a 5-point Likert-type scale to their level of agreement with the statement given as "Strongly Agree", "Agree", "Undecided", "Disagree" and "Strongly Disagree".

E. Validity and Reliability of the Instrument

The instrument was validated through expert judgement to establish both face and content validity. The draft copy of the instrument was presented to the expert in Measurement and Evaluation for observation and modification. After taking the concerns of the expert, the contents of the questionnaire were modified as instructed; and it was returned to the expert for corrections until the final copy of the questionnaire was produced for administration. In addition, a re-test was used to obtain the reliability co-efficient at three (3) week intervals and it was found to be 0.85. This was considered reliable, and hence, suitable for use in this research.

F. Administration of Instrument

The instrument was administered to the respondents by the researcher and five other research assistants under close supervision of the researcher. Two hundred (200) questionnaire forms were administered, one hundred and seventy-three (187) [93.5%] forms could be retrieved and used for the study. Others forms were either not returned or not properly filled. Out of this percentage, ninety-six (96) males and ninety-one (91) females were involved for the analysis.

G. Data Collection

The data collected were scored on the basis of 5-point Likert-type scale of 5, 4, 3, 2 and 1 as indicated by their level of agreement as contained in the retrieved questionnaire to represent "Strongly Agree", "Agree", "Undecided", "Disagree" and "Strongly Disagree", respectively. Furthermore, an arbitrary "state" of attitudes of academic staff towards the use of information communication technology as a pedagogical tool for effective teaching" was identified as "positive" and "negative" based on (1):

$$\frac{\text{Scale highest value} - \text{Scale lowest value}}{\text{possible attitude state}} \qquad (1)$$

$$\frac{5-1}{2} = \frac{4}{2} = 2.00$$

This equation was used to organise and summarise data to provide a simple indication of the level of the means associated with each response. Reference [8] used a similar equation to group the results of his findings. Using these intervals of 2.00, a mean range of 3.00 to 5.00 represented "positive" or "agree" and any mean less than 3.00 represented "negative" or "disagree". Therefore, a Reference Mean of 3.00 was used for decision.

H. Method of Data Analysis

The data collected were analysed by using mean and standard deviations to analyse data on the research questions while t-test, Analysis of Variance (ANOVA) and Pearson product moment correlation (PPMC) statistical analysis were used to test the three null hypotheses postulated for the study at 0.05 level of significance. These analyses were performed with the aid of Statistical Package of Social Science (SPSS) 21 Version for windows.

VII. RESEARCH RESULTS

The responses from the administered copies of the questionnaire were analysed and presented as follows.

A. Answering Research Questions

Research Question One: What are the attitudes of academic staff towards the use of ICT as a pedagogical tool for effective teaching?

Table I shows the mean and standard deviation analysis on the attitudes of academic staff towards the use of ICT effective teaching. On the attitude of the academic staff towards ICT, the result presented in Table I shows that the respondents seem to have a positive attitude towards ICT. All items on the scale received mean responses that are above the Reference Mean of 3.00. The item that received the lowest mean score is "computers can enhance students' learning" ($\overline{X}$=3.27; SD=0.61). Table Mean 3.98 further shows that the academic staff in FCT College of Education, Zuba-Abuja, Nigeria had positive attitudes towards the use of ICT as a pedagogical tool for effective teaching. This finding is similar to [10] which affirmed that ICT could be used by the teachers as a pedagogical tool in improving teaching when there are

adequate resources and infrastructures.

TABLE I
MEAN AND STANDARD DEVIATION ANALYSIS ON THE ATTITUDES OF
ACADEMIC STAFF TOWARDS THE USE OF ICT EFFECTIVE TEACHING

S/n	Items	Minimum	Maximum	$\overline{X}$	SD
A	ICT innovations make me much more productive in teaching.	3.00	5.00	4.11	0.95
B	ICTs in teaching save time and efforts.	3.00	5.00	4.09	0.70
C	Using ICT is very enjoyable in teaching.	3.00	5.00	4.21	0.88
D	ICTs have proved to be effective teaching tools.	3.00	5.00	4.09	0.83
E	I feel application of ICTs make subject matter more stimulating.	3.00	5.00	4.18	0.75
F	I feel ICT utilization enhance students' learning capability.	2.00	5.00	3.90	0.69
G	ICTs are fast means of getting information.	3.00	5.00	3.81	0.75
H	ICTs help me organise my lesson.	3.00	5.00	3.27	0.61
I	I use ICTs to improve teaching process.	3.00	5.00	4.19	0.87
			Table Mean	3.98	

TABLE II
MEAN AND STANDARD DEVIATION ANALYSIS ON THE USES OF ICT BY THE
ACADEMIC STAFF FOR EFFECTIVE TEACHING

S/n	Items	Minimum	Maximum	$\overline{X}$	SD
A	Creation of effective communication during teaching.	3.00	5.00	4.10	0.91
B	Concretize abstract issues or topics in teaching and learning process.	3.00	5.00	4.06	0.69
C	Stimulation of teachers' interest towards effective teaching.	3.00	5.00	4.21	0.86
D	Enhancing effective delivery of instructions to a large audience.	3.00	5.00	3.46	0.76
E	ICT helps to save time and reduce verbalism or repletion of words.	3.00	5.00	4.23	0.73
F	Providing meaning and useful sources of information to teachers and learners.	2.00	5.00	4.01	0.68
G	Application of ICT to improve teaching methods.	3.00	5.00	3.91	0.75
H	To promote closer relations between the leaner and teacher.	3.00	5.00	4.58	0.69
I	Finding information and resources on the Internet.	3.00	5.00	4.10	0.81
J	Fast information processing, analysing and problem solving higher teacher's productivity.	3.00	5.00	4.14	0.86
			Table Mean	4.08	

Research Question Two: What are the uses of ICT by the academic staff for effective teaching?

Table II shows the mean and standard deviation analysis on the uses of ICT by the academic staff for effective teaching. Table Mean 4.08 revealed that the respondents agreed with the researcher on the uses of ICT for effective teaching. This finding supported the positive attitudes towards the use of ICT as a pedagogical tool for effective teaching that was recorded in Table I.

Research Question Three: What are the challenges facing the academic staff towards the use of ICT as a pedagogical tool for effective teaching?

Table III shows the mean and standard deviation analysis on the challenges facing the academic staff towards the use of ICT. All items on the scale received mean responses that are above Reference Mean of 3.00. The item that received the lowest mean score is "vandalization of ICT tools" ($\overline{X}$=3.29; SD=0.76). The item that received the highest mean score is "unreliable power supply" ($\overline{X}$=4.25; SD=0.87). Table Mean 4.07 further shows that the academic staff in FCT College of Education, Zuba-Abuja, Nigeria agreed with the researcher on the challenges facing the academic staff towards the use of ICT.

TABLE III
MEAN AND STANDARD DEVIATION ANALYSIS ON THE CHALLENGES FACING
THE ACADEMIC STAFF TOWARDS THE USE OF ICT

S/n	Items	Minimum	Maximum	$\overline{X}$	SD
A	Low Internet speed.	2.00	5.00	3.96	0.84
B	Unreliable service providers.	2.00	5.00	4.04	0.83
C	High procurement cost of ICT tools.	2.00	5.00	3.93	0.78
D	Unreliable power supply.	2.00	5.00	4.25	0.87
E	Cyber insecurity.	3.00	5.00	4.21	0.84
F	Vandalization of ICT tools.	3.00	5.00	3.92	0.76
G	System failure.	2.00	5.00	4.14	0.88
H	Unreliable out sourcing personnel.	2.00	5.00	4.13	0.90
I	Outdated ICT tools.	3.00	5.00	4.09	0.81
			Table Mean	4.07	

Research Question Four: What are the practical solutions to the challenges facing the academic staff towards the use of ICT as a pedagogical tool for effective teaching?

Table IV shows the Mean and Standard Deviation Analysis on the Practical Solutions to the Challenges Facing the use of ICT by the academic staff. All items on the scale received mean responses that are above Reference Mean of 3.00. The item that received the lowest mean score is "provision of updated educational software for effective teaching" ($\overline{X}$=3.98; SD=0.78). The item that received the highest mean score is "provision of uninterrupted power supply by the government" ($\overline{X}$=4.25; SD=0.84). Table Mean 4.11 further shows that the academic staff in FCT College of Education, Zuba-Abuja, Nigeria agreed with the researcher on the practical solutions to the challenges facing the use of ICT.

B. Testing Hypotheses

The postulated hypotheses for this research were tested as follow:

H01: There is no significant difference between male and female respondents' attitudes towards the use of ICT as a pedagogical tool for effective teaching.

Table V shows the t-test analysis of male and female respondents' attitudes towards the use of ICT for effective teaching. The table further shows that the male respondents had a mean of 3.41 and a standard deviation of 0.73, while the female respondents had a mean of 3.58 and a standard deviation of 0.86. The table further shows that the calculated t-

test value of 1.46 is lesser than the critical t-value of 1.97 at 0.05 level of significance; the hypothesis is therefore accepted. This implies that there is no significant difference between male and female respondents' attitudes towards the use of ICT as a pedagogical tool for effective teaching. This finding is similar to [9] which indicated that there is no statistically significant difference in the mean scores of male and female in attitude towards ICT.

TABLE IV
MEAN AND STANDARD DEVIATION ANALYSIS ON THE PRACTICAL SOLUTIONS TO THE CHALLENGES FACING THE USE OF ICT

S/n	Items	Minimum	Maximum	$\overline{X}$	SD
A	Development of comprehensive plan for ICT usage in towards effective teaching.	2.00	5.00	4.02	0.88
B	Provision of high Internet connectivity for accessing information.	2.00	5.00	4.05	0.82
C	Provision of uninterrupted power supply by the government.	2.00	5.00	4.25	0.84
D	Provision of updated educational software for effective teaching.	2.00	5.00	3.98	0.78
E	Provision of technical supports for the use of ICT in teaching.	2.00	5.00	4.22	0.74
F	Procurement of updated ICT facilities for the academic staff.	2.00	5.00	4.19	0.77
G	Adoption of trainings and workshops on ICT usage for effective teaching.	2.00	5.00	4.12	0.84
H	Safe guiding the ICT facilities.	2.00	5.00	4.21	0.81
I	Provision of credit facilities by banks at affordable interest rate to subsidize the cost of ICT facilities.	2.00	5.00	4.07	0.80
J	Provision of infrastructures for ICT usage towards effective teaching.	2.00	5.00	4.02	0.79
			Table Mean	4.08	

TABLE V
T-TEST ANALYSIS OF MALE AND FEMALE RESPONDENTS' ATTITUDES TOWARDS THE USE OF ICT

Gender	N	$\overline{X}$	SD	Df	Cal. t	Crt. t
Male	96	3.41	0.73	185	1.46	1.97
Female	91	3.58	0.86			

*P=0.05 (*Crt. t implies Critical t)*

H02: There is no significant difference in the attitudes of academic staff towards the use of ICT as a pedagogical tool for effective teaching on the basis of Schools/Faculties.

TABLE VI
ANOVA ANALYSIS ON THE ATTITUDES OF ACADEMIC STAFF TOWARDS AND SCHOOLS

Source of Variation	SS	Df	MS	F-Ratio	F-Critical
Between Schools	13.98	4	3.49	5.18	2.42
Within Schools	122.89	182	0.68		
Total	136.87	186			

P=0.05

Since the calculated F-value 5.18 greater than the critical value of 2.42, the null hypothesis is rejected. This means that there is a (statistically) significant difference among the population means. The p-value for 5.18 is 0.000568, so the test statistic is significant at that level. Therefore, there is significant difference in the attitudes of academic staff towards the use of ICT as a pedagogical tool for effective teaching on the basis of Schools/Faculties. Reference [6] concluded that there is no significant difference in attitude towards ICT between the College of Education, Polytechnic and University academic staff.

H03: There is no significant relationship between the attitudes and the uses of ICT by the academic staff for effective teaching.

TABLE VII
DESCRIPTIVE STATISTICS BETWEEN ATTITUDES AND THE USE OF ICT ATTITUDES TOWARDS THE USE OF ICT

Variables	N	$\overline{X}$	SD
Attitudes	187	4.06	0.3219
Uses of ICT	187	4.08	0.32421

TABLE VIII
CORRELATION ANALYSIS BETWEEN ATTITUDES AND THE USE OF ICT FOR EFFECTIVE TEACHING

Variables	Correlation	Attitudes	Uses of ICT
Attitudes	Pearson Correlation	1	0.834**
	Sig. (2-tailed)		0.000
	N	187	187
Uses of ICT	Pearson Correlation	0.834**	1
	Sig. (2-tailed)	0.000	
	N	187	187

**. Correlation is significant at the 0.01 level (2-tailed)

Table VII shows the means and standard deviations of attitudes and uses of ICT. Attitudes of the respondents have a mean of 4.06 and standard deviation of 0.3219, while the uses of ICT has mean of 4.08 and standard deviation of 0.32421. A Pearson correlation analysis was used to ascertain the relationship between attitudes of the respondents and uses of ICT.

Table VIII shows the correlation analysis between attitudes and the use of ICT for effective teaching. The Pearson correlation coefficient, r, is 0.834, and that it is statistically significant (p < 0.001). This implies that there is a positive and significant relationship between the attitudes and the uses of ICT by the academic staff for effective teaching. In a similar report, Reference [9] showed that there was a significant relationship between the level of ICT use for educational purposes and teachers' attitudes towards the use of ICT.

VIII. CONCLUSION

This study was designed to investigate the attitudes of academic staff towards the use of information communication technology as a pedagogical tool for effective teaching. The study was a descriptive research and involved the use of questionnaire as an instrument for collection of data. The population used for this study consisted of the academic staff

of FCT College of Education, Zuba-Abuja, Nigeria. The data collected were analysed using mean and standard deviation to answer the four research questions, while the three hypotheses were tested at 0.05 level of significance.

The findings revealed positive attitudes towards the use of ICT as a pedagogical tool for effective teaching. Among the uses of ICT included: creation of effective communication during teaching, to promote closer relations between the leaner and teacher, and enhancing effective delivery of instructions to a large audience. It was also discovered that that there is a positive and significant relationship between the attitudes and the uses of ICT by the academic staff for effective teaching.

IX. RECOMMENDATIONS

Based on the findings of this research, the following recommendations were made:

1. Uninterrupted power supply should be provided by the government to aid the use of ICT facilities for effective teaching.
2. Trainings and workshops for academic staff on ICT usage for effective teaching should be encouraged and supported.
3. High Internet connectivity for accessing information towards the use of ICT in teaching should be provided at affordable costs.
4. Technical supports on the use of ICT for effective teaching should be provided.
5. Credit facilities by banks at affordable interest rates to subsidize the cost of ICT facilities should be provided.
6. Updated educational software for effective teaching should be provided to the academic staff so as to enhance the teaching process.

ACKNOWLEDGMENT

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