

THE PERCEPTION OF ELECTRICAL ENGINEERING TRADE TEACHERS ON THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY FOR TEACHING IN TECHNICAL COLLEGES IN ADAMAWA AND GOMBE STATES OF NIGERIA

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Abstract

This study was conducted to determine the perception of electrical engineering trade teachers on the role of information and communication technology (ICT) for classroom instructions in Technical Colleges in Adamawa and Gombe States of Nigeria. A forty item structured Questionnaire was distributed to twenty-six electrical engineering trade teachers from Adamawa and Gombe States technical colleges for collection of data. The questionnaire was face validated and trial tested on five electrical engineering trade teachers from Taraba state. Test- re-test method of establishing reliability was used and cronbach Alpha formula was used to calculate a reliability index of 0.78. Mean and standard deviation were used to answer the research questions. Student's t-test was used to test the three hypotheses formulated to guide the study. The study revealed that electrical engineering trade teachers lack some basic ICT skills like skills in database and spreadsheet. The findings revealed among others the following: electrical engineering teachers perceived themselves as having inadequate skills required to use the ICT for classroom instructions. It also revealed that teachers were not comfortable with regards to the role of ICT vis-à-vis their in classroom management/control and loyalty from students. Recommendations based on the findings included among others that electrical engineering trade teachers should be given sufficient retraining on how to use ICT for teaching and learning processes. Teachers should acquire

the requisites knowledge and skills for integrating the ICT into education for instructional delivery.

Keywords: Perception; Technical Teachers: Information and Communication Technology

Introduction

The use of Information and communication technology (ICT) for teaching is a functional way of providing education to learners in order to assist them imbibe the required capacity for the world of work. Only very few jobs if at all they are available in the labour market today do not require the use of skills in technology, collaboration and teamwork ; all of which can be acquired through teaching with ICT. This ICT is fundamentally changing the way we live, learn, and work (Aladejana, 2007).

Information and communication technology has transferred the means by which we inform ourselves; remain up to date with world events and areas of personal interest, and further learning. In this era, books and journals are no longer the only primary sources of information for learning activities. Man now regularly rely on images, video, animations and sound to acquire information and learn as a result of increased and improved access to the internet which has accelerated this phenomenon. We now acquire and access information in ways fundamentally different from pre- ICT era.

The availability of the internet has given rise to electronic approach to the educational system called E-learning . E-Learning is becoming increasingly prominent in the world. E-Learning, that is delivered on the platform of ICT infrastructure promises to widen access to education at a reduced cost.

Researches such as Tinio (2008) and Chitanana; Makaza& Madzima among others (2008) have identified the importance of ICT in education. It has been found that ICT can promote student's intellectual capabilities through higher order thinking, problem solving, improved communication skills and deep understanding of the learning tool and the concepts to be taught (Sutton, 2006). ICT can promote a supportive and, interactive teaching and learning environment, create broader learning communities and provide learning tools for students, including those with special needs (Trinidad, 2001; Hawkins, 2002). Computer- generated graphics have been used to illustrate relation ship of all kinds, especially dynamic process that cannot be illustrated by individual pictures (Franke, 1985). It has also be found that ICT has the capability of improving school attendance levels and enable the creation of a new and more effective curriculum. It is no more contestable that ICT has contributed to enhancing teaching/learning and student's achievement in many subjects. Despite all the potential advantages

of ICT in enhancing the educational process, ICT has not been fully accepted and given its due reorganization as veritable tool for teaching by most teachers. Some teachers have different perception for it. In the light of this, therefore, this study determines the perception of Electrical engineering trade teachers on the use of information and communication technology (ICT) for teaching in technical colleges in Adamawa and Gombe states of Nigeria.

Research Questions

The following research questions guided the study.

1. What is the perception of Electrical Engineering trade teachers on the skills they possessed in ICT for classroom instructions?
2. What is the perception of Electrical engineering trade teachers on the role of ICT for classroom vis-à-vis their role in classroom management and control.
3. What is the perception of Electrical Engineering trade teachers on the integration of ICT in the curriculum of engineering trade at technical college level?

Hypotheses

The study was guided by the following hypotheses.

H₀₁. There is no significance difference between the mean rating of male and female Engineering trade teachers perception on the skills possessed in ICT for classroom instructions.

H₀₂. There is no significance difference between the mean rating of male and female Engineering trade teachers perception on the role of ICT for classroom instructions vis-à-vis their role in classroom management and control.

H₀₃. There is no significance difference between the mean rating of male and female Engineering trade teachers perception on the integration of ICT in the curriculum of Electrical Engineering trade at technical college level.

Methodology

This was study carried to find out the perception of Electrical Engineering trade teachers on the use of information and communication technology (ICT) for teaching in technical colleges. The study was carried out in six technical colleges in Adamawa and Gombe states, Nigeria. Opinion survey research design was adopted for the study. All the twenty six Electrical Engineering trade teachers from the two states were used for the study. A forty items structured questionnaire was used for data collection. Mean and standard deviation were used to answer the three research questions and t-test was used to test the three hypotheses at 0.05 level of

significance. Decision on each item was based on true limits of real numbers and since the average of a five points rating scale is 3.00 which coincides with the possessed or agreed options, the lower limit of 3.00 point which is 2.50 was used to judge whether teachers agreed or possessed as the case may be. In this case, any item with a mean rating of 2.50 and above was regarded as possessed, while items with mean rating below 2.50 were regarded as not possessed or not agreed as the case may be.

Results

The results of the study were presented in accordance with the research questions and the hypotheses. In each case the research questions and hypotheses were re-stated followed by the table that shows the results.

Research Question 1: What is the perception of Electrical Engineering trade teachers on the skills they possessed in ICT for classroom instructions?

Table 1: Mean and Standard Deviation of the Perception of Electrical Engineering Trade Teachers on the Skills they possessed in IC for classroom instructions.

S/No	ICT skills for classroom instructions	mean	St.Dev.	Remarks
1.	word processing	3.03	0.88	Possessed
2.	Spreadsheet	2.37	0.95	Not Possessed
3.	Presentation	2.52	1.08	Possessed
4.	Database	2.10	1.27	Not Possessed
5.	Search engines	2.52	1.05	Possessed
6.	Communication	3.01	0.98	Possessed
7.	Internet	2.02	1.01	Not possessed
8.	Worldwide Web	2.12	1.11	Not Possessed

As shown in Table 1, the respondents moderately possessed skills in word processing, presentation search engines and communication with mean rating of 3.02, 2.52, 2.52 and 3.01 respectively. On the other hand, the respondents do not possess skills in database, internet, worldwide web and spreadsheet. This implies that Electrical Engineering trade teachers do not possessed some adequate skills to use the computer technology for classroom instructions.

Research Question 2: What is the perception of Electrical Engineering trade teachers on the role of ICT for classroom instructions vis-à-vis their role in classroom.

Table 2: Mean Rating and Standard Deviation of the Perception of Electrical Engineering trade teachers on the role ICT vis-à-vis their role in classroom management and control.

S/No	item	mean	St .Dev.	Remark
9.	ICT can improve teaching and learning processes	4.63	0.63	Agree
10.	Use of ICT will reduce the work load for teachers	4.42	1.12	Agree
11.	Use of ICT will reduce teacher's dominance in the class	4.41	0.83	Agree
12.	ICT can enhance students critical thinking skills	4.18	0.88	Agree
13.	ICT can enhance students participation and feedback	4.34	0.69	Agree
14.	ICT can enhance collaboration among students	4.20	0.64	Agree
15.	ICT can enhance teachers-students interactions	4.28	0.71	Agree
16.	Use of ICT will demean teacher's personality	3.36	0.98	Agree
17.	Educational resources can be improved through internet	4.75	0.52	Agree
18.	ICT tends to increase students learning motivation	4.20	0.88	Agree
19.	ICT can enhance students language writing skills	3.94	0.76	Agree
20.	Use of ICT will make students not to be loyal to teachers	3.52	0.88	Agree
21.	ICT will make students to compete for with teachers	3.68	0.93	Agree
22.	Lack of ICT skills makes teachers inferior before students	3.72	0.85	Agree
23.	ICT can enhances class instruction	4.50	0.62	Agree
24.	ICT provides for sending feedback to students	4.19	0.85	Agree

$$\bar{X}_G = 4.33 \quad SD_G = 0.76$$

Table 2. Shows the mean ratings and standard deviations of Electrical Engineering trade teachers' perception of the role of ICT in classroom instructions vis-à-vis their role in classroom management and control. Out of the 16 items, none of the items were rated below 2.50, the cut off point for the study. This implies that Electrical Engineering trade teachers on the one hand appreciate the contributions of ICT in teaching and on the other hand, they are exercising fears that ICT will take over their management and control role in the classroom.

Research question 3: What is the perception of Electrical Engineering trade teachers on the integration of ICT in the curriculum of engineering trade at technical college?

Table 3: Mean Rating and Standard Deviation of the Perception of Electrical Engineering Trade Teachers on the integration of ICT in the curriculum of engineering trade at technical college level.

S/No	item	mean	St .Dev.	Remark
25	Introduction to computer science	4.02	0.85	Agree
26	Introduction to file processing	4.51	0.72	Agree
27	Linear algebraic	2.23	0.92	Disagree
28	Software development and management	4.00	0.86	Agree
29	Software design and management	3.42	0.91	Agree
30	Ata structure and algorithms	3.40	0.78	Agree
31	Discrete mathematics	2.08	0.81	Disagree
32.	Computer programming	3.30	0.72	Agree
33.	System analysis and design	2.47	0.90	Disagree
34.	Introduction to digital design and microprocessor	2.30	0.62	Disagree
35.	Management information system	4.17	0.84	Agree
36.	Database design and management	4.59	0.75	Agree
37.	Compiler construction	2.37	0.86	Disagree
38.	Web design	2.69	0.95	Agree
39.	Networks technology	4.30	0.87	Agree
40.	Internet technology	3.36	0.73	Agree

$$\bar{X}_G = 3.33 \quad SD_G = 0.82$$

Regarding ICT integration into technical colleges' curriculum, Table 3 revealed that 11 items out of the 16 items were perceived relevant as the teachers agree with them while 5 items were not agreed by teachers' integration into technical colleges' curriculum as perceived by Electrical Engineering trade teachers. The grand mean of 3.33 on a general note implies that the teachers perceived integration of ICT relevant into the curriculum.

Hypothesis 1: There is no significance difference between the mean rating of male and Electrical Engineering trade teachers perception on the skills possessed in ICT for classroom instructions.

Table 4: t-test of difference between male and female teachers on the perceived skills they possessed.

Gender	N	X	St. D	df	α	t-cal	t-critic	Remark
Male	18	3.45	0.62	24	0.05	2.15	2.06	Rejected
Female	8	2.82	0.72					

Table 4, revealed that the t-calculated value of 2.15 is greater than the t-critical value of 2.06. This is an indicative of the fact that the null hypothesis was rejected. Hence, there is significant difference between the mean rating of male and female Electrical Engineering trade teachers

perception on ICT skills they possessed. The male teachers with mean of 3.45 tended to possess more ICT skills than their female counterpart.

Hypothesis 2: There is no significance difference between the mean rating of male and female Electrical Engineering trade teachers perception on the role of ICT for classroom instructions vis-à-Vis their role in classroom.

Table 5: t-test of difference between male and female teachers on the role of ICT for classroom instruction vis-à-vis their role.

Gender	N	X	StD	df	t-cal	t-critic	Remark
Male	18	4.36	0.48	0.05	1.38	2.06	Accepted H ₀₂
Female	8	4.02	0.62				

Table 5, shows that th 1.38 t-calculated value is less than the 2.06 t-critical value and as such, the null hypothesis is accepted. Therefore, there is no significant difference between the mean rating of male and female Engineering trade teacher's perception on the role of ICT vis-à-vis their role in classroom. Both male and female Electrical Engineering trade teachers have the same perception as to the role of ICT for classroom instructions and what will become of their role.

Hypothesis 3: There is no significance difference between the mean rating of male and female Engineering trade teachers perception on the integration of ICT in the curriculum of Electrical Engineering trade at technical colleges level.

Table 6: t-test of difference between male and female teachers perception on the integration of ICT into curriculum

Gender	N	X	StD	df	t-cal	t-critic	Remark
Male	18	3.29	0.33	24	1.71	2.06	Accepted H ₀₂
Female	8	2.89	0.86				

Table 6 reveals that the 1.71 t-calculated value is less than the 2.06 t-critical value. This implies that the null hypothesis holds right. That is there is no significance difference between the mean rating of male and female Electrical Engineering trade teachers perception on the integration of ICT in the curriculum of Electrical Engineering trade at technical colleges level. Both sexes seem to agree on the items to be integrated into the curriculum.

Finding of the Study

The findings of the study are presented in accordance with the research questions and hypotheses.

1. Lack some basic ICT skills like skills in database and spreadsheet.
2. Electrical Engineering trade teachers are positively disposed about the role of ICT for instructional delivery.
3. Electrical Engineering trade teachers perceived strongly that the following are relevant for integration in the curriculum of technical colleges:- Database design and management; introduction to file processing; networks technology; introduction to computer science software development and management and data structure and algorithms.
4. Electrical Engineering trade teachers are not very comfortable with ICT with regards to their role in classroom management and control.
5. Electrical Engineering trade teachers perceived that the following are less relevant for integration in technical colleges' curriculum:- Logic algebraic; discrete mathematics; compiler construction; system analyses and design and introduction to digital design and microprocessor.
6. Electrical Engineering trade teachers have positive perception towards the integration of ICT for teaching irrespective of their genders.

Discussion of the Findings

The findings of this study revealed that majority of Electrical Engineering trade teachers were moderately competent only in word processing and communication. The result is in agreement with Duhu (2012) who found that technology education lecturers integrate only two out of the sixty ICT components in their teaching and learning activities because they do not have the skills in the other applications. This implies that, even if ICT facilities are available in the technical colleges, electrical engineering trade teachers will not be able to fully integrate these ICT facilities in their teaching activities effectively because they can only use ICT who skills they possess, that is since they are competent in word processing and communication, they will likely limit their use of the technology to administrative functions.

This study discovered that Electrical Engineering trade teachers are positively disposed about the role of ICT when it is used for instructional delivery on the one hand and on the other not comfortable as regards their role in classroom management and control. This finding is in agreement with the study of Teo (2008) who found that teachers were more positive about their attitude toward computers and intention to use computer than their actual use of computer and their control of the computer, thereby deducting that there was inconsistency between Electrical Engineering trade teachers perception and their actual use of ICT technology in classroom. The implication of this finding is that, Electrical Engineering trade teachers are ready for retraining to acquire the ICT skills necessary for proper integration of technology in teaching activities.

The finding regarding research question three revealed that Electrical Engineering trade teachers perceived strongly as relevant the integration of 11 out of 16 items (ICTs) for integration in Electrical Engineering trade curriculum. This implies that Electrical Engineering trade teachers are ready to embrace this technology to their classrooms and exploit it for the benefit of their students as the world changes from manual to automated era of doing work. This agrees with the write up of James(2005) who enumerated among others a number of ICT skills components for integration into curriculum of secondary school education.

Recommendations

1. Electrical Engineering trade teachers should be given sufficient training on how to use ICT in teaching and learning processes to acquire the requisite knowledge and skills in integrating the technology into classroom activities.
2. Electrical Engineering trade teachers should be trained on specific instructional use of technology instead of general use of computers. In addition, training should be provided on the use of ICT software other simple word processing.
3. Government should ensure that ICT policy is translated into reality. An ICT policy implementation commission should be established. This commission should be adequately funded and given autonomous of providing and supervising ICT facilities in the schools.
4. Electrical Engineering trade teachers should be provided with adequate technological resources, technical support and administrative support to encourage the teachers successfully use ICT in classrooms

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