

Repositioning Technical Education and Training through Effective Utilization of ICTs in Achieving Inclusive and Equitable Quality Education in Technical Colleges of Gombe State.

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Abstract

Information and Communication Technology (ICT) plays a dynamic role in technical education as learners can access knowledge and improve their skills from anywhere and anytime. This aim of this paper is to reposition technical education through effective utilization of ICT to promote teaching and learning. A survey research design was adopted by the researchers and having three purposes and research questions was carried out on a population of One Hundred and fifty teachers from the six technical colleges in Gombe state where only One Hundred and Twenty teachers were selected through simple random sampling. A structured questionnaire called “Repositioning Technical Education through Effective Use of ICT” (RTEUI) was used to collect data for the research on a four point Likert Scale type form strongly agree to strongly disagree. The data was analyzed using mean, percentages, weighted average and bar charts. The research revealed that all teachers agreed to a certain extent of the integration of ICTs into their teaching to encourage and motivate the students towards better learning environment. The paper concludes by recommending that, information and communication technology facilities should be provided to all technical colleges within Gombe state and Government should provide enough budgets to ensure the requirement of ICT tools and machineries for each classroom.

Introduction

The use of Information and Communication Technologies (ICTs) in the education process can be divided into two broad categories: ICTs for Education and ICTs in Education. ICTs for education refers to the development of information and communication technology specifically for teaching/learning purposes, while ICTs in education involves the adoption of general components of information and communication technologies in the teaching-learning process. Different teachers use different tools to improve their teaching skills.

Accordingly, teachers from all disciplines have widely integrated ICT to improve their teaching styles (Liu, 2012; Liu and Velasquezbryant, 2011; Hew and Brush, 2010). Therefore, the effective use of ICT significantly contributes to the emergence of reforms in teaching and learning processes in all sectors of

education (Pulkkinen, 2013). Currently, ICT plays an important role in promoting new instructional methods for teaching and learning, such as: self-paced learning (Roberts, 2014), network learning (González, 2014) and online discussion (González, 2013). Moreover, effective use of ICT can facilitate student-centered active learning (Ellis 2014), engage students in collaborative learning as well as enhance their social interaction (Dodge 2013).

Developed and developing countries, are undertaking the important and complex task of restructuring the education and training systems to meet the development requirements in the context of changing environment. Technical Education systems are expected to produce a new breed of competent workforce who can compete and excel in a rapidly changing environment and improve the country's economy. Technical Education

makes the single largest contribution in developing human resources in this age of technology. One can measure the technological development of a nation by looking at its Technical Education system. A well-knit Technical Education system, geared to the national needs and responsive to the global needs, can cause quantum leap towards development and provide its population the competitive edge over other nations.

Technology can be applied for different uses, however, and not always for an academic purpose. One of the goals of the ICT competency standards for teachers is to improve teachers' practice (Samuel, 2016). However, the Standards do not merely focus on ICT skills. By combining ICT skills with emergent views in pedagogy, curriculum, and school organization, the standards are designed for the professional development of teachers who want to use ICT skills and resources to improve their teaching, collaborate with colleagues, and perhaps ultimately become innovative leaders in their institutions.

Purpose of the study

The main purpose of the study is reposition technical education through effective utilization of ICTs in achieving inclusive and equitable quality education in technical schools in Gombe state, specifically, the study intends;

1. To determine the factors responsible for the use of ICTs in technical colleges in Gombe state.
2. To find out the impact of ICTs in teaching and learning process.
3. To determine the current innovations in teaching and learning process through ICTs in technical colleges in Gombe state..

Research questions

The following research questions were considered for the study;

1. What are the factors responsible for the use of ICTs in technical colleges in Gombe state?

2. What are the impacts (positive/negative) of ICTs in teaching and learning process?
3. What are the current innovations in teaching and learning process through ICTs in technical colleges in Gombe state?

Methodology

Design

This was a descriptive study intended to examine the role of Technical Education in achieving inclusive and equitable quality education in Nigeria. According to John, (2016), descriptive research involves providing careful descriptions of a phenomenon. Its purpose is to generate an accurate description of an event, attitude, or behavior.

Population and sample

The population for the study was 150 vocational/technical education teachers from three technical colleges in Gombe state teaching ICT in the technical colleges. The researcher also adopted a simple random sampling method to select 120 technical education teachers from the three technical colleges within Gombe state.

Instrument for Data Collection

The instrument for data collection used in this study was a questionnaire called, "Effective Utilization of ICTs in Technical Colleges, (EUITC)" the questionnaire had items regarding the opinions of the respondents on different aspects of ICTs used in their institutions which were to be answered on a four – points Likert type scale from strongly agree to strongly disagree for research questions 1 and 2, but for research question 3, it gives the respondents an open- ended form for them to freely express their opinion regarding current innovations in Technical Education.

Data Collection and Data Analysis

A cover letter explaining the purpose and importance of the study was delivered to the respondents and request

on their assistance and cooperation. The Survey instrument was r1321delivered to the 120 teachers of technical education personally with the aid of a research assistant and was later retrieved after giving them time to respond to the questionnaire through drop and pick method. A retrieval rate of 100% was recorded. The data were coded and analyzed using descriptive statistics including percentages, bar charts and weighted average were used and analyzed using Statistical Packages for social science Software (SPSS) version 16.00. Responses with weighted average of 2.50

and above were considered significant, otherwise not significant.

Reliability of the instrument

The instrument was pilot tested on a small group of 60 vocational/technical teachers who were not part of the participants and reliability co-efficient of 0.89 was calculated using Cronbach's alfa.

Validity of the instrument

The instrument was validated by a panel of three experts in the field of technical education within federal college of education (tech) Gombe. Their observations were made and then finally delivered to the respondents.

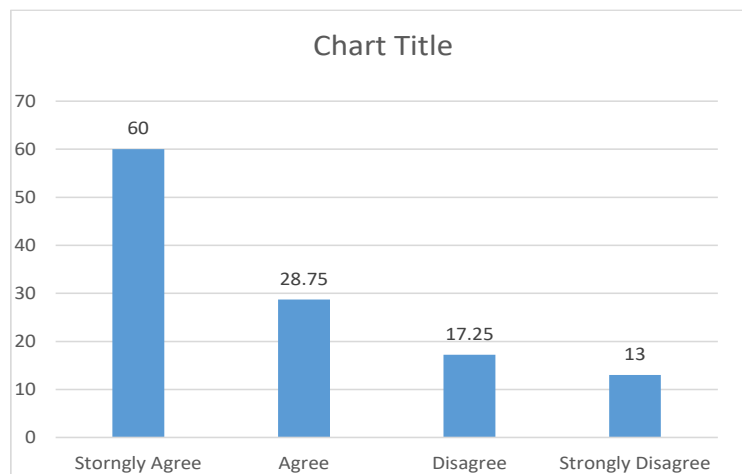
Results

Research question 1. What are the factors responsible for the use of ICTs in technical colleges in Gombe state?

Table 1. *Opinion of teachers on factors responsible for the use of ICTs in technical colleges in Gombe state*

s/no	Items	4 Strongly agree	3 Agree	2 Disagree	1 Strongly disagree	Weighted Average	Remark
1	ICT is very much helpful for improving the techniques of T-L process in TE	64 (53.33%)	28 (23.33%)	12 (10.00%)	16 (13.33%)	4.66	Significant
2	Using ICT, Teaching-Learning will be easier, interesting & time saving.	44 (36.67%)	42 (35.00%)	21 (10.00%)	13 (13.00%)	4.40	Significant
3	Students will be more motivated to learn if ICT tools are used in TE.	65 (54.17%)	24 (20.00%)	19 (15.83%)	12 (12.00%)	4.50	Significant
4	ICT tools are too complicated to	67	21	17	11	1.63	Not

use in T- L process.	(55.83%)	(17.50%)	(14.17)	(9.17%)	significant
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(Fig 1. average mean response for items 1-4)

The response regarding the opinion of teachers on factors responsible for the use of ICT in technical school is strongly agreed (WA=4.66) with the effect shown in Fig 1. This indicate that their response is significant meanwhile, the response regarding using ICT in the figure shows that teaching/learning will be easier, the response showed from the respondents that is was significant, his was shown with a

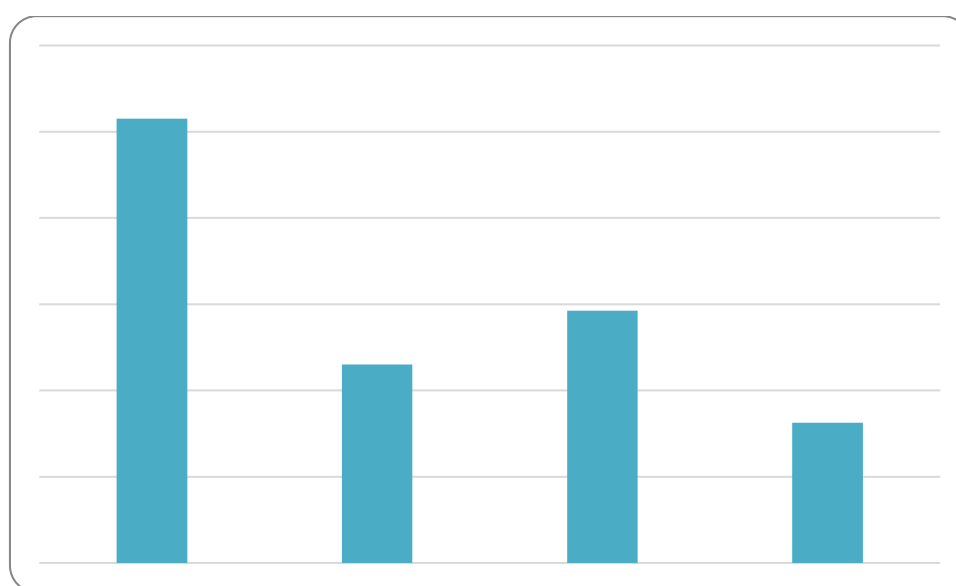
mean (W.A.=4.40). Also, the response regarding whether students will be more motivated to learn if ICT tools were used in TE is strongly agreed (W.A.=4.50) this indicated that the response is significant. But responses regarding ICT tools being too difficult to use in teaching/learning process (W.A.=1.63), the respondents disagreed to this fact by saying it's not significant.

Research question 2: What are the types (positive/negative impact of ICTs in teaching and learning process?

Table 2. *Opinion of teachers on the types (positive/negative impact of ICTs in teaching and learning process.*

s/no	Items	4 Strongly agree	3 Agree	2 Disagree	1 Strongly disagree	Weighted Average	Remark
5	ICT is very much needed for development of TE.	61 (50.83%)	31 (25.83%)	13 (10.83%)	15 (12.50%)	4.56	Significant
6	Government has enough policy to improve the present condition of ICT in TE.	10 (8.33%)	17 (14.17%)	76 (63.33%)	17 (14.17%)	1.33	Not Significant

7	There is lack of understanding about the knowledge of ICT among the TE Teachers' in Gombe state	69 (57.50%)	24 (20.00%)	12 (10.00%)	15 (12.50%)	4.32	Significant
8	TE teachers don't have sufficient skills for using ICT.	66 (55.00%)	20 (16.67%)	16 (13.33%)	18 (15.00%)	3.58	Significant



(Fig 2 average mean response for items 5-8 above)

From Table 2, the response regarding ICT which is very much needed for the development of TE was strongly agreed with 50.83% and W.A of 4.56 also with the effect described in Fig. 1, indicating that the item was significant. But the response on whether government has enough policies to improve the present condition in TE was disagreed by the respondents 63.33% and W.A. of 1.33 as fig 2 shows the effect of the disagreement. The respondents also agreed to the fact that there is lack of understanding about

the knowledge of ICT among the TE Teachers' in TE and TE teachers don't have sufficient skills for using ICT this was evident by their response of 57.50% and 55.00% with W.A. of 4.32 and 3.58 respectively.

Research question 3: What are the current innovations in teaching and learning process through ICTs in Technical Colleges in Gombe state?

Table 3; Opinion of teachers regarding the current innovations in teaching and learning process through ICTs in technical colleges in Gombe state

Factor	Teachers' opinion	Percentage (%)
Economical	8	6.67
Time saving	19	15.83
Communication	3	2.50
Easy to prepare	8	6.67
Easy to motivate students	35	29.17
Attractive	14	11.67
Easy to integrate	30	25.00
Easy to administer	3	2.50

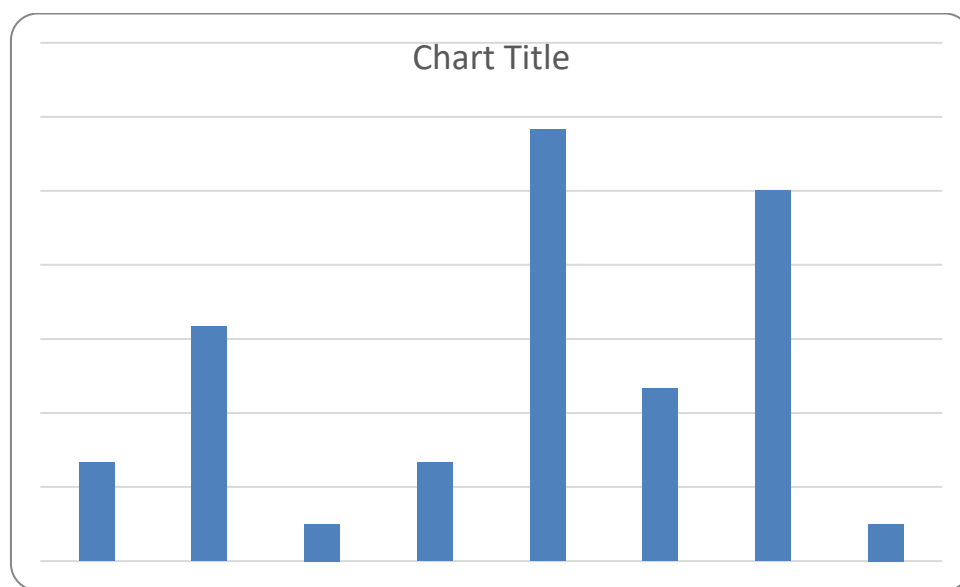


Fig 3; showing opinion of teachers regarding What are the current innovations in teaching and learning process through ICTs in technical colleges in Gombe state.

The result reveals that every factor stimulates ICTs use for effective and efficient teaching-learning at a certain percentage. That means all factors tabulated in the table have greater role for influencing use of ICTs in technical education. However, most of the teachers opined that using ICT is time saving, easy to motivate students and economical. The teachers, from the figure above, opined that classroom communication is easy to motivate, easy to prepare, attractive and have a great impact on use of ICT in

technical education. The teachers opined that ICTs are easy to administer, easy to integrate and have a great impact on use of ICTs in technical education (Figure 3; Table 3). Teachers are very much stimulated to host new technology such as ICTs in teaching and learning process which will improve the quality of technical education system in polytechnic institutions.

The research revealed that most of the teachers have knowledge about using ICTs in teaching and learning. Majority of

the respondents were in favour of arrangement of adequate ICTs for classroom teaching. Also, the respondents were in favour of using ICTs as they are very much helpful for improving the process of teaching- learning this is in support to what Edmund (2013) said that integrating ICT into teaching/learning process aid in the delivery of subject matter more practical and since most teachers have a knowledge that will help them deliver their lecture in a more practical form. It was found also that the classroom environment is friendly by using ICTs by the same researcher.

Most of the respondents opined that if ICTs are used in technical education, students will be more connected to learn with each other. Moreover, ICTs save students time to understand technical education problem. Most of the respondents agreed that using ICT in teaching-learning will be easier and interesting, this is also in support of the opinion of Kunle (2013) when he opined that using ICT gives room for students to come together and share a common problem and that using ICT provides a suitable and friendly environment for the students. The result of the findings also show that more than 50% of technical education teachers agreed that their teaching and learning process will be easier, interesting, and time saving than the conventional way of teaching-learning. More than 60% of TE teachers strongly agreed that ICT is very much important for the process of teaching-learning most of the respondents have given their opinion on inspiration of quality of teaching and learning through ICTs. Most of the respondents strongly agreed that ICTs are indispensable in instructional design in technical education. ICTs can improve the efficiency of teaching of the technical education teachers. Most of the respondents were in favour of replacing traditional teaching system by ICT-based system. Majority of the respondents opined that ICT is indeed

for growth of technical education. Most of the respondents were in favour of refining the government policy to improve the present condition of ICTs in technical education. Most of the respondents think that training on ICTs contributes to enhancing their performance in teaching and learning.

The study revealed that technical education teachers required training on effective use of ICTs in classroom. Majority of the respondents opined that ICTs stimulate teaching-learning process this also supports what Mohammed (2012) said since technical teachers are conversant with the use of ICT, they require a more advance training on the use of ICT to be able to function well. The research revealed that time saving (14.68%), motivation (13.37%), and attractiveness of ICTs (12.23%) stimulate its use in teaching and learning process in learners can access the education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. It would provide the rich environment and motivation for teaching learning process which seems to have a profound impact on the process of learning in education by offering new possibilities for learners and teachers.

These possibilities can have an impact on student performance and achievement. Similarly, wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching and improved academic achievement of students.

CONCLUSION

The barrier of the teaching learning activities lack ICT skills of instructional staff (teachers), inappropriate instructional materials to meet the objectives of teaching and learning, inadequate motivational techniques to increase the interest to learn. Also, lack of training of

the teachers on ICT is a major barrier to improve the quality of the technical education.

Updating of these skills may improve the quality of the technical education. In particular, ICTs have impacted on technical educational practice to date in quite small ways but its impact will grow considerably in years to come and that ICT will become a strong agent for change among many educational practices.

Extrapolating current activities and practices, the continued use and development of ICTs within education will have a strong impact on ICT and teaching learning process; quality and accessibility of education; learning motivation, learning environment and ICT usage and academic performance. The adoption and use of ICTs in technical education have a positive impact on teaching- learning, and research. ICT can affect the delivery of education and enable wider access to the same.

Recommendations

From the research findings as outlined and the evidences gathered, the researcher formulated recommendations for future actions to achieve greater impact in both areas of teaching and learning in technical colleges in Gombe state. These are;

1. Information and communication technology facilities should be provided to all technical colleges within Gombe state.
2. Government should provide enough budget to ensure the requirement of ICT tools and machineries for each classroom
3. Every teacher should have at least one computer with internet connection.
4. Government should take proper policy to train the teachers for their respective field as well as in ICTs. Policies in this area should include measures raising the confidence levels of the teachers (by giving appropriate in-service and initial

teacher training in ICT) and also by rewarding them for the use of ICT.

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