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Use of ICT For Improving Instructional Delivery of Technical and Vocational Education and Training Skills in Kano State Technical Colleges

Kabiru Bawa*, Abdullahi Rabiu**

*(Department of Science and Technical Education, Yusuf Maitama Sule University, Kano-Nigeria)

** (Department of Science and Technical Education, Yusuf Maitama Sule University, Kano-Nigeria)

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Abstract:

The purpose of the study was to evaluate the use of ICT for improving instructional delivery of Technical and Vocational Education and Training (TVET) skills in technical colleges of Kano State. The study consisted of three objectives which include; identifying relevant ICT equipment to use, identifying the constraint against the effective use of ICT, and identifying the strategies that will be adopted toward full usage of ICT for improving the effective delivery of TVET skills in Kano State. Three research questions were derived based on the objectives of the study. The population of the study comprised 79 teachers of the five technical colleges. 63 teachers were used as a sample of the study. The study adopted a descriptive survey research design and a Questionnaire on Improving Instructional Delivery of TVET Skills using ICT (IIDTSIQ) was developed and used as an instrument. The instrument was validated, and a reliability of 0.80 was obtained using the test-retest method. Data collected from the retrieved questionnaires were analyzed using mean and standard deviation.Thus, the findings of the study indicate that; high cost of ICT gadgets, insufficient smart boards, epileptic power supply, poor internet access, and lack of proper funding for maintaining the few available ICT equipments were some of the constraints that affected instructional delivery of TVET skills using ICT. Hence, it is recommended that instructional materials such as a computer, smart boards, and internet facilities should be made available and maintain, internet services and power supply should be stable, and finally, Computer education should be made compulsory to both the teachers and students of the technical colleges in Kano State.

Keywords **—ICT, TVET, Skills, Improving, Instructional delivery**

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I. INTRODUCTION

The demand for a well-trained and highly skilful youth towards human and economic development of a country cannot be overemphasized and this consequently has a direct impact on entrepreneurship or wealth creation which leads to the reduction of unemployment. If Nigeria needs to fully maximize the use of its human and natural resources and emerge as a strong economy country like many developed countries, it must pay attention to its educational system. It is a recognised fact that technical vocational education and training (TVET) has all it takes in meeting up this quest. In Nigeria, TVET aims at providing trained manpower in applied science, technology and commerce, technical knowledge, and vocational skills necessary for agricultural, industrial, commercial, and economic development. It develops people who can apply scientific knowledge to the improvement of environmental problems for the use and convenience of men (FRN, 2013). Hence, to

attain these objectives means giving training and imparting the necessary skills leading to the production of craftsmen, technicians, and other skilled personnel who will be enterprising and self-reliant ad enable them to live in an intelligent, competitive, and technologically challenging society. Societies nowadays have become convoluted, competitive, and dynamic with the presence of technology in all aspects of human endeavours and the world of work. In line with this, Oluwasola (2014) revealed that technology when used in classrooms makes the instruction to be students centred. Therefore, the use of technology in classrooms has become a popular method of instruction by many technical educators at different levels of technical education in many developed countries (Okorieocha, 2015). Despite its numerous challenges, teachers in technical and vocational education needs to look inward and rework their method of instructional delivery to match with the current societal requirements. Among which include the use of Information and Communication Technology (ICT) by teachers to communicate ideas, described projects, and other information so that they can accommodate a large number of students per class, it makes learners absorb more information and takes less time, and minimize fatigues.

II. STATEMENT OF THE PROBLEM

There are facts of the role of ICT as a fundamental management tool at all levels of an educational system from classrooms to ministries. Doughal and Brenda (2004) declared that one of the roles of ICT in schools is that of providing a new framework for teachers that can foster a revision and improvement of teaching and learning practices. Teachers can take this great advantage of the growing availability of these ICT resources to use them in facilitating their teaching profession. Despite the impressive role of ICT in-school workshops, laboratories, and classrooms, the extent to which technology improves instructional delivery in technical and vocational education remains to be largely unknown. This call for evaluation into the use of ICT for improving instructional delivery of TVET skills in technical colleges of Kano State, Nigeria.

III. PURPOSE OF THE STUDY

The purpose of the study is to find out how best you can use ICT to improve the instructional delivery of TVET skills in technical colleges of Kano State. Specifically, the study intends to:

1. Identify the relevant ICT equipment to be used for improving the instructional delivery of TVET skills in technical colleges of Kano State.
2. Find out the constraints against the effective usage of ICT in improving the instructional delivery of TVET skills in technical colleges of Kano State.
3. Identify the strategies that can be adopted toward full usage of ICT for improving instructional delivery of TVET skills in technical colleges of Kano State.

IV. RESEARCH QUESTIONS

1. What is the relevant ICT equipment to be used for improving the instructional delivery of TVET skills in technical colleges, Kano State?
2. What are the constraints against the effective use of ICT in improving the instructional delivery of TVET skills in technical colleges, Kano State?
3. What are the strategies that can be adopted toward full usage of ICT for improving instructional delivery of TVET skills in technical colleges, Kano State?

V. METHODOLOGY

The study adopted a descriptive survey research design. A descriptive survey is a method of collecting data using questionnaires or interviews from a sample that has been selected to represent a population to which the findings can be generalized (Gall, Gall & Borg, 2007). A descriptive survey research design is suitable for this study as it

involves obtaining information base on the opinion and views of the respondents. The study was carried out in Kano State, Nigeria where the teachers in the technical colleges are located. The population of the study comprised of all teachers of technical colleges in the area. A total number of 79 technical teachers constituted the population of the study and 63 was considered to be a sample of the study (Research Adviser, 2006). The instrument for data collection was a structured questionnaire, which was developed by the researcher and this was validated by four (4) experts in the area of TVET who have many years of teaching and training experiences. A pilot test was carried out in the neighbouring Jigawa State which was outside the study area. Using the Cronbach Alpha coefficient formula, the reliability of the instrument was calculated, it revealed that the internal consistency of the instrument was 0.82. Data collected from the retrieved questionnaires were analyzed using mean with help of statistical package for social science (SPSS) software, version 21.

The weightings of the items in the questionnaire were SA = 4; A = 3; D = 2; SD = 1. And A = 5; O = 4; S = 3; R = 2; N = 1. The average of these points are 2.50 (4 + 3 + 2 + 1) = 10/4 =2.50 and 3.00 (5+4+3+2+1) = 15/5 =3.00. These were used for the analysis. A mean of 2.50 and above indicates agreement with the item statement while a mean of 2.49 and below indicates disagreement (items with four points Likert scale). While on items with five points Likert scale, a mean of 3.00 and above indicates agreement with the item statement while a mean of 2.99 and below indicates disagreement (Endeley, 2014).

VI. Results

Research Question One: What are the relevant ICT equipment to be used for improving instructional delivery of TVET skills in technical colleges, Kano State?

Table 1: mean responses of the respondents on the relevant ICT equipment to be used for improving instructional delivery of TVET skills in technical colleges, Kano State.

S/N	Items	Mean	Remarks
1	Technical teachers require a computer in teaching technical college students	4.00	Agreed
2	The technical teachers need projectors for teaching	3.40	Agreed
3	Technical teachers need multimedia facilities in teaching technical colleges students	3.60	Agreed
4	Technical teachers need smartboards as an emerging technology in teaching	3.80	Agreed
5	Technical teachers need to be utilizing internet facilities in teaching	3.72	Agreed
6	Technical teachers need IPads to serve as standby for internet connection in their teaching	2.36	Disagreed

Source: fieldwork 2019

Table 1 revealed that items 1, 2, 3, 4, and 5 have means of 4.00, 3.40, 3.60, 3.80, and 3.72 respectively, while item 6 with a mean score of 2.36. This indicated that the respondents agreed with all the items and disagreed with only one item. This implies that computers and other related facilities would help in improving the instructional delivery of TVET skills in technical colleges.

Research Question Two: What are the constraints against the effective use of ICT in improving instructional delivery of TVET skills in technical colleges, Kano State?

Table 2: mean responses of the respondents on the constraints against the effective use of ICT in improving instructional delivery of TVET skills in technical colleges, Kano State.

S/N	Items	Mean	Remarks
1	The high cost of ICT facilities such as a personal computer, printer, and projectors	3.60	Agreed
2	None or Poor internet connectivity in the technical colleges	4.00	Agreed
3	Lack of technical know-how to operate the ICT facilities	3.50	Agreed
4	Technical teachers are not interested in using ICT to improve their knowledge	2.20	Disagreed
5	Virus attack on the ICT facilities especially the computers	4.00	Agreed
6	Unstable power supply for the operation of ICT facilities	3.80	Agreed
7	Lack of funds to maintain the few available computers and other ICT facilities.	3.40	Agreed

Source: fieldwork 2019

The result in table 2 above revealed that items 1, 2, 3, 5, 6, and 7 have means of 3.60, 4.00, 3.50, 4.00, 3,80, and 3.40 respectively which indicated that the respondents agreed with all the items in the table. This implies that among the constraints that affect ICT usage for improving instructional delivery of TVET skills in technical colleges include high cost of ICT facilities, poor internet connectivity, unstable power supply, lack of technical know-how, and virus attack to the facilities.

Research Question Three: What are the strategies that can be adopted toward full usage of ICT for improving instructional delivery of TVET skills in technical colleges, Kano State?

Table 3: mean responses of the strategies that can be adopted toward full usage of ICT for improving instructional delivery of TVET skills in technical colleges of Kano State.

S/N	Items	Mean	Remarks
1	Compulsory computer education to technical teachers.	3.40	Agreed
2	Provision of adequate computers and internet connectivity should be made in the technical colleges.	4.00	Agreed
3	Maximum attention to be given to the utilization of ICT in the teaching of technical education.	3.10	Agreed
4	Training and retraining should be made to the technical teachers on the utilization of ICT in the teaching of technical education.	3.80	Agreed
5	Antivirus should always be up to date for each of the computers and any facility that requires it in the technical colleges.	3.40	Agreed
6	A stable power supply or a standby generator set should be provided to the technical colleges.	4.00	Agreed
7	Funds should be made available for the TVET courses in technical colleges.	3.20	Agreed

Source: fieldwork 2019

As shown in Table 3 above, items 1,2,3,4, 5, 6, and 7 have means of 3.40, 4.00, 3.10, 3.80, 3.40, 4.00, and 3.20 respectively which indicated that the respondents agreed with all the items. This implies that the items constituted the strategies to be adopted to enhance ICT usage for improving the instructional delivery of TVET skills in technical colleges of Kano State.

VII. Discussion of the Results

The result on the relevant ICT equipment that can be used to improve instructional delivery of TVET skills in technical colleges was analysed and presented in table 1 which shows that the respondents agreed with all the items except the item that says technical teachers needs IPads to serve as standby for internet connection in their teaching. This is in line with the study of Oguejiofor (2014), who observed that the use of ICT in the classrooms has become a popular method of instruction by many technical educators at a different levels of technical education. Ede and Samson, (2015) stated that emerging technologies are technologies that are perceived as capable of changing the way things are. These technologies are generally new but include older technologies that are still controversial and relatively undeveloped in potential. This means that emerging technologies are those technical innovations which represent progressive development within a field for competitive advantages.

Results on the constraints against the effective use of ICT in improving instructional delivery of TVET skills in technical colleges, Kano State were analyses and presented in table 2 above which shows that the respondents agreed with the items, high cost of ICT facilities such as personal computers, multimedia and projectors, none or poor internet connectivity in the technical colleges, unstable power supply for the operation of the ICT facilities, lack of technical know-how to operate the ICT facilities, virus attack on the ICT facilities especially the computer and Lack of fund to maintain the few available computers and other ICT facilities which have mean scores greater than the average and hence are accepted as constraints to the use of ICT for improving instructional delivery of TVET skills, while the item that stated that technical teachers are not interested in using the ICT to improve their knowledge have a mean scores less than the indicate average, therefore not

accepted as constraint. This is in line with the study of Doughal and Brenda (2004) who stated that using computer software greatly influenced the learning process of students. Therefore addressing the above constraints will positively improve the teachers' awareness, zeal, and knowledge on the use of the ICT for effective teaching and learning, because their instructional delivery skills in using the ICT equipment have been improved and also these will influence important issues like choosing tasks, setting tasks, and framing and learning purposes to accommodate practical components.

The result on the strategies that can be adopted toward full usage of ICT for improving instructional delivery of TVET skills in technical colleges of Kano State was analysed and presented in table 3 above, which indicated that the respondents agreed with all the items as strategies for improving instructional delivery of TVET skills in the technical colleges of Kano. This is in line with the study conducted by Okorieocha (2015) who stated that technical colleges' teachers should modify their mode of instructional delivery system to match with the current societal requirements. This is one of the ways the goal of technical education which is to train and produce craftsmen and technicians who can be enterprising and become self-reliant can succinctly and fruitfully be achieved in Kano and Nigeria at large.

VIII. Conclusion

The use of ICT to improve the instructional delivery method of TVET teachers in teaching technology is of paramount importance to achieve sustainable technical and vocational education and training growth. The ICT facilities required for improving instructional delivery of TVET skills are computers, printers, projectors, electronics, and lecture boards. Others are internet facilities, receivers, decoders, and an adequate stable power supply. High cost of the ICT facilities (computers, printers, projectors) virus attack on the ICT facilities especially the computer, poor internet connectivity, unstable power supply, and lack technical know-how on the operation of the ICT facilities by the teachers possess a great challenge and problems to the use of ICT facilities in improving instructional delivery of TVET skills by the teacher. Finally, strategies that can help to improve the usage of ICT facilities for improving teacher instructional delivery of TVET skills include compulsory computer education, adequate and stable power supply, and availability of computers among others.

IX. Recommendations

From the findings of this study, the following recommendations are made:

1. The science and technical schools board in collaboration with the state ministry of education should provide computers, printers, projectors, smart boards, internet facilities, and internet service subscriptions in the schools especially the technical colleges.
2. Computer education should be made compulsory to both the teachers and their students and also the use of ICT in teaching and learning should be made compulsory to all the teachers and students.
3. Training and retraining should be made to the technical teachers on the utilization of ICT in the teaching of technical education. Also latest and up-to-date antivirus to avoid virus attack should be provided and finally, an uninterrupted power supply or a standby generator should be provided to each of the technical colleges to supplement the national grid power supply.

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