

Effective Utilisation Of Information Communication Technology (Ict) Tools By Vocational Technology Teachers For Efficient Instructional Delivery

*Keshinro Olorunfemi Tola and ²Prof K.R.C.Okoye

^{*}Department Of Technical Education, Adeniran Ogunsanya College Of Education

²Department Of Vocational Education, Nnamdi Azikiwe University Awka

Accepted 8 December, 2015

This paper examines effective utilization of ICT tools by technology teachers for efficient instructional delivery. It sought to determine the competency level of ICT required of technology teachers and extent at which technology teachers use ICT to improve students' learning outcomes. The study was conducted in Lagos State Technical Colleges, Nigeria. A descriptive survey research design was used. Structured questionnaire was used for data collection. 210 technology teachers participated in filling the questionnaires. Analysis through the use of SPSS computer program was carried out on the responses of 198 respondents who returned the questionnaires. The findings among other things showed that teachers are to demonstrate competent in: using power point presentation for lesson delivery; incorporate use of media and technology for teaching where appropriate and the extent at which teacher use ICT tools is very low. It was recommended that TVET institutions should spend a considerable amount of time and efforts developing teachers' competency in ICT pedagogy to improve students' learning outcomes.

Key words: Information Communication Technology Tools; Technical and Vocational Education Training (TVET); Learning Outcomes; Competency level and Instructional delivery.

INTRODUCTION

A good number of researchers have shown that the quality of learning and teaching can be significantly enhanced when Information communication Technology (ICT) tools is approached and utilized as an intellectual multi-tool. Utilization of ICT tools in various fields of education and training has been a topic of discussion by educational researchers (Wang, 2009; Howie and Blignaut, 2009; Bryderup et al., 2009; Rogers, 2002; Gulbahar, 2007; Louw et al., 2009, Jimoyiannis, 2010), organization (OECD, 2004; UNESCO, 2008; ADB 2009), and stakeholders in other sectors of the economy. This might be unconnected to the fact that ICT tools gained its application in almost all areas of educational specialization; in architecture (Wang, 2009), mathematics and science (Howie and Blignaut, 2009), social sciences (Louw et-al, 2009), comparative studies (Blignaut et al., 2010), geographical information system (Muniandy and Lateh, 2010), teacher education (Usun, 2006, 2009), vocational education (Jantrakool, 2010) and in other human development programs too numerous to mention. In Nigeria, TVET courses were taught in secondary schools, Technical colleges, Colleges of education (Technical), Polytechnics and Universities to produce skilled, semi-skilled manpower, craftsmen/master craftsmen, and technical teachers at Nigerian Certificate in Education (NCE) and bachelor level and technicians/technologists, in various sectors of the economy for industrial and technological development (Federal Ministry of Education, 2000) In technology education students have to relate directly with tools, equipment, materials and situations. Such can be visualized through ICT. ICT plays vital role in sourcing, assessing, retrieving and managing information that can facilitate teaching and learning. If technology teachers are ICT compliance, they can browse on the internet to get useful information which could be of help in technology education instruction. They can use computer to store and retrieve information, television and radio which form part of technological tools can also be used as instructional strategy to facilitate teaching and learning which enhance their competencies.

STATEMENT OF THE PROBLEM

With the importance of ICT tools for teachers to improve knowledge, and how it affects technology education subjects and its use in teaching and learning. Literature reveals that technology education teachers lack knowledge and skills for presentation of ICT teaching materials (Saud et al., 2010) lack of teacher competency (Albirini, 2006), and teachers slowness to adopt ICT (Hayes, 2007). Majority of technology teachers in our secondary schools and technical colleges do not have fundamental knowledge of ICT tools. This invariably jeopardizing the fundamental objectives of vocational technical education and vision, mission and policy of ICT as stated in the National Policy of ICT (2001) to produce ICT-skilled graduates.

Research Questions

- What is the competencies level of ICT required of technology education teachers to enhance effective instructional delivery?
- To what extent do technology education teachers use ICT tools to improve students' learning outcomes?

HYPOTHESES

- H₀₁: Is there any significant difference in the mean responses of NCE (Technical) and Bachelor degree Technology teachers regarding the competencies level of ICT required to enhance effective instructional delivery.
- H₀₂: Is there any significant difference in the mean responses of NCE (Technical) and B.Ed Technology teachers regarding the extent at which they make use ICT tools to improve students' learning outcomes.

RESEARCH METHOD

The research employed descriptive survey research design. Two hundred and ten (210) technology/vocational teachers in the five state own Lagos technical colleges participated in the study which comprise of 52 NCE (Technical) and 158 B. Ed (Technology) teachers. Structure questionnaire and observation were used as instrument to collect data from respondents. The instrument has three sections. Section A, B' and C'. Section 'A' sought information on personal data of the respondents such as gender years of experience and age. Section 'B' contains information on the competencies level of ICT required of technology teachers to enhance teaching and students learning outcomes. Section 'C' contains items on extent at which technology teachers use ICT tools to improve learning outcomes. The questionnaire items were structured on a likert scale type. The questionnaire was subjected to face and content validation by three experts from Department of Science and Technology Education, University of Lagos. The internal consistency of the instrument was determined using Cronbach Alpha. The instrument was administered on twenty technical teachers in Federal college of science and Technical. Yaba, Lagos. The reliability coefficient established were as follows: Section B- $\alpha = .80$; Section C – $\alpha = .82$; and overall – $\alpha = .88$. The instrument was administered by the researcher through personal contact. Out of 210 questionnaires administered, 198 were duly filled and returned by the respondents. These represented 94.2% rate of return. Data generated from the questionnaire were analyzed using mean, standard deviation, t-test statistics at .05% level of significance. SPSS was used in the data computation.

RESULTS AND DISCUSSION OF FINDINGS

ICT Competencies required of technology teacher to enhance effective instructional delivery

In order to determine the ICT competencies required of technology teacher to enhance effective instructional delivery, mean and standard deviation of respondents was carried out and presented in Table 1.

Table 1: ICT competencies required of technology teachers to enhance effective instructional delivery N= 198

S/N	ICT Competencies required of technology teacher to enhance effective instructional delivery	Mean	SD
1	Starting and shutting down computer system/peripherals successful	4.08	.63
2	Ability to identify and use of icons, menu and window clearly	3.60	.86
3	Competent to make backup copies of documents and files	4.52	.50
4	Protect and care for storage media	4.44	.50
5	Skilled in cutting, copy and paste document/text	4.00	.50
6	Using words processing for typing and other applications correctly	4.71	.45
7	Skill to prepare and use power point presentation for lesson delivery	4.47	.50
8	Design and management of learning environment and resources	4.69	.45
9	Use media and tools to address differences in learning and performance	4.70	.51

10	Incorporate use of media and technology for teaching where appropriate	3.55	.52
11	Use technology tools to support learning of student with learning disability	4.32	.76
12	Select and create learning experiences relevant to learners and based principle of effective teaching	3.97	.93
13	Develop performance tasks that require students to locate and analyze information as well as draw conclusion.	4.28	.55
14	Ability to add and delete documents on computer	4.08	.54
15	Ability to use computer and video source for large screen presentation	4.21	.83
16	Use varieties of media to communicate and present information clearly	3.95	.71
Overall mean		4.15	.88

Table 2: Extent at which technology education teachers use ICT tools to improve students' learning outcomes N=198

S/NO	Extent at which technology teachers use ICT tools to improve students' learning outcomes	Mean	SD
1	Practical skills are easy to be taught using programmed instruction in form of software	2.67	.53
2	Regular use core-draw to develop, design and drawing as well as print materials improve student skills	2.98	.46
3	Micro-soft excel to is very effective in preparing students records and results	3.01	.50
4	Use of power point presentation for lesson delivery to students regularly enhance students performance	2,68	.45
5	I usually connect video and devices with computer to present information for large screen display for students	3.00	.55
6	Regular browsing on internet enhance source for relevant materials in instructional delivery	3.56	.65
7	I make use of white board in instruction delivery	2.06	.40
8	C-drom and other storage tools are effective to store relevant materials obtain from internet and computers	3.67	.65
9	Interactive video made it easy for practical skills to be taught using ICT tools.	2.56	.51
10	Television and radio part of technological tools are used as instructional strategy to facilitate teaching and learning	2.89	.52
11	Application of smart board to develop cognitive and affective skill in students	2.43	.76
Overall mean		3.01	.93

Comparison between the responses of NCE (Technical) and Bachelor degree technology teachers regarding the competencies level of ICT required in enhancing effective instructional delivery.

In order to determine the competencies level of ICT required in enhancing effective instructional delivery; an independence sample t-test was conducted to compare the mean scores of NCE and Degree teachers. The independent sample t-test scores were presented in Table 3.

Table 3: t test results of respondents on the competencies level of ICT required in enhancing effective instructional delivery N=210

Variables	N	\bar{X}	SD	F	ρ
NCE (Technical) teachers	52	3.64	.50	.258	.797
Bachelor degree teachers	158	3.57	.61		

As shown in Table 3 above, there were no statistically significant differences between the NCE (Technical) and Degree technology teachers in Lagos state technical colleges' means scores on ICT competencies required in enhancing effective instructional delivery. ($t=.258, p>.05$) In order words technology teachers in technical colleges are required to posses certain level of competencies to enhance effective instructional delivery.

COMPARISON ON EXTENT AT WHICH NCE (TECHNICAL) AND BACHELOR DEGREE TECHNOLOGY TEACHERS USE ICT TOOLS TO IMPROVE STUDENTS' LEARNING OUTCOMES

In order to investigate the extent at which NCE (Technical) and Bachelor degree technology teachers use ICT tools to improve students' learning outcomes; an independence sample t-test was conducted to compare the mean scores of NCE (Technical) and Bachelor degree teachers. The independent sample t-test scores were presented in Table 4.

Table 4: t test results of respondents on the extent at which NCE (Technical) and Bachelor degree technology teachers use ICT tools to improve students' learning outcomes N=210

Variables	N	\bar{X}	SD	F	ρ
NCE (Technology)Teachers	62	4.20	.38	.659	.512
Bachelor degree Teachers	35	4.63	.48		

As seen in Table 4, Bachelor degree teachers in Lagos technical college had relatively higher mean scores than NCE (Technical) teachers. However, there were no statistically significant differences between the NCE (Technical) and Bachelor degree teachers mean scores on the regarding the extent at which they make use of ICT tools to improve students' learning outcomes ($t=.659, p>.05$). The results show that degree teacher use ICT tools more often than NCE teachers and thereby influence students learning outcomes.

IMPLICATION OF THE FINDINGS

The study has shown that utilization of ICT tools eases the expansion and reinforcement of TVET by enhancing networking and knowledge sharing opportunities, also has the capability to make available practical learning experiences that are needed to the direct work situations. The study sensitizes TVET institutions to establish the necessary measures that need to take to ensure that TVET teachers possess the necessary ICT competencies. These may include conducting needs assessments to determine the ICT comfort level of teachers, establishing minimum training standards, developing training plans and establishing appropriate mechanisms to monitor training results. The study further sensitizes technology teachers need to develop themselves on use of ICT by vigorously pursue ICT training with seriousness for teaching and learning process. As such, serious work needs to be done to curtail the worrisome situation, considering the fact that the fast changing world of work never awaits anybody. This situation also poses a great challenge to stakeholders, policy makers and curriculum implementers.

CONCLUSIONS

The findings of this study shows that the extent at which technology teachers use ICT tools is very low as respondents disagree that micro-soft excel is very effective in preparing students records and results; use of power point presentation for lesson delivery to students regularly enhance students performance; use of white board in instruction delivery; usually connect video and devices with computer to present information for large screen display for students and application of smart board to develop cognitive and affective skill in students. It was recommended that Federal and state government should ensure that her policy statement regarding the provision of necessary infrastructure and training for the utilization of ICT tools in the school system is effectively implemented. Teachers and TVET institutions should spend a considerable amount of time and efforts developing teachers' competency in ICT pedagogy to improve students' learning outcomes.

REFERENCES

- Albirini A (2006). Teachers' Attitude toward Information and Communication Technologies: the case of Syrian EFL Teachers. *Computer Education*, 47: 373-398.
- Bryderup IM, Larson A, Quisgaard TM (2009): ICT-Use, Educational Policy Changes in Pedagogical Paradigm in Compulsory Education in Denmark: from a Lifelong Learning Paradigm to a Traditional Paradigm? *Educational Information Technology*, Springer Science + Business Media, LLC, pp. 365-379.
- Federal Government of Nigeria (FGN) (2000): *Technical and Vocational Education Development in Nigeria in the 21st Century with the Blue-Print for Decade 2001-2010*. Abuja: Federal Ministry of Education.
- Gulbahar Y (2007): *Technology Planning: A Road Map to Successful Technology Integration in Schools*. Computer Education, Elsevier Ltd, 49: 943-956
- Hayes DN (2007): ICT and learning: Lessons from Australian classrooms. *Computer Education Elsevier Ltd*, 49: 385-395
- Jantrakool R (2010): Integration of information and Communication Technology (ICT) into Vocational Education in Thailand. *Proceedings of the International Conference on VTET Research and Networking*, 23- 24 June.
- Jimoyannis A (2010): Developing a Technological Pedagogical Content Knowledge Framework for Science Education: Implications of a Teacher Trainers' Preparation Program; *Proceedings of Informing Science & IT Education Conference (InSITE.)*. Retrieved on
- Louw J, Brown C, Muller J, Soudien C (2009): *Instructional Technologies in Social Science in South Africa*. *Computer Education*, 53: 234-242. Elsevier Ltd.
- Muniandy V, Lateh H (2010): *ICT Implementation among Malaysian Schools: GIS, Obstacles and Opportunities*. *Proceedings Social. Behav. Science*. Elsevier Ltd, 2: 2846- 2850.