CHALLENGES OF USING INFORMATION COMMUNICATION TECHNOLOGY (ICT) IN NIGERIAN TECHNICAL VOCATIONAL EDUCATION INSTITUTIONS

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Abstract

The paper examines the challenges faced in using Information Communication Technology (ICT) in Nigeria Technical Vocational Education Institutions. Although Nigerian government recognises the potentials of ICT in the school system which is evidenced in the educational reform policies aimed at integrating the use of ICT in schools, a substantial numbers of personnel are either not using ICT in the school or the use of ICT is at low level. Due to this glairing gap, the study on which this paper is based was designed to investigate the various ICT resources available, major application of ICT, challenges faced in using ICT resources, ways of improving uses ICT in TVET institutions. The study was conducted in 12 randomly selected TVET institutions in south west, Nigeria. A descriptive survey research design was used where both quantitative and qualitative methodologies were employed. Data collection methods included closed and open-ended questionnaires. The lecturers that participated in filling the questionnaires were selected by random sampling, while all administrators participated in filling the instrument. Analysis through the use of SPSS computer programme was carried out on the responses of 84 respondents who returned the questionnaires. The findings of the study showed that ICT resources, available in the TVE institutions are short in supply and include only lap top, desk top and internet facilities; ICT are not effectively apply as teaching tools in TVE institutions as it was not used effectively to address teaching issues. It was employed mainly for secretarial activities and to a lesser extent on a few other managerial duties, particularly typing and processing of examinations. Major challenges faced by the schools which have contributed to the inadequate use of ICT in TVE institutions included lack of technically experienced lecturers, limited ICTs facilities and infrastructure, problem of electricity and limited computer hardware dedicated to managerial and secretarial work, lack of time and absence of appropriate teaching software. The findings suggest that for effective utilization of ICT, innovative strategies that include purchasing/supply of computers to institutions; training teaching and non-teaching staff.
Key words: Challenges, ICT, Technical and Vocational Education, Application of ICT and Resources.

Introduction

Education has been identified as a vital tool for any form of development, be it economic, social or political. It is a factor that determines the state of prosperity sustenance of welfare and

security of the people (Bray, 2000; Scott and Guogh, 2004; Osakwe, 2006). The yearnings, needs, aspirations as well as the cultural heritage and environment of any society determine, to a large extent, the kind of knowledge and skills to be acquired (Adebosin, 2004). Therefore, the kind of education operated should bring about skill development and behaviour change as this will enable individuals to live and contribute meaningfully to the overall development of the society in which they live. Since the government regard education (technical vocational education inclusive) as an instrument par excellence for facilitating and fostering national development as well as economic growth, it is imperative that, the kind of technical vocational education and training (TVET) to be provided should be holistic and wholesome so as to foster balanced national development.

Technical Vocational Education and Training (TVET) is one of a recognized and effective process by which quality, up-to-date, information literate and knowledgeable workers are prepared, trained or retrained worldwide. Federal Republic of Nigeria (NPE, 2004) defined TVET as a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. In a nutshell, TVET prepares human resources for the ever changing world of work. In that, for effective participation in the world of work the study of technologies and related sciences as reflected in the definition is of paramount significance that can be realized with adequate information communication technology (ICT) arrangement in TVET institutions. Practical skills can now be delivered virtually via a well organized ICT set up; gone are the days where practical skills are taught using hands-on learning only. Programmed instruction in form of software and interactive video made it easy for practical skills to be taught using ICTs, so also, job that requires only hands-on.

Information and communication technologies (ICTs) mean different things to different educators and researchers; hence there are various views and definitions of ICT. Yusuf (2007) described ICT as an electronic technology used for accessing, processing, gathering, manipulating, presenting and communicating information. He emphasised that when ICTs are employed in education, they can accelerate, enrich and deepen basic skills in reading, writing, arithmetic and the sciences beside motivating and encouraging students to learn as they become more independent and responsible for their learning. ICT in the views of Nwakundo, Oguejiofor and Nwankwo (2006) is a tool that comprises electronic devices which are utilised for the information and communication needs of institutions, organisations, students and individuals. Such electronic devices include computers (software and hardware), networking, telephone, video, multimedia and internet. Application and utilisation of these devices convert information, text messages, sounds and motion to common digital forms.

Similarly, Khan, Hasan and Clement (2012) explained that ICT as explained to education are those technologies (radio and television), video, digital versatile disk (DVD), telephone (both fixed line and mobile phones), satellites systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as

videoconferencing and electronic mail, ICT today creates new opportunities for teaching and learning, it helps to shift the emphasis in learning environments from teacher-centered to learner-centered; where teachers' roles has change from being the key source of information and transmitter of knowledge to becoming guides for students' learning; and where the role of students changes from one of passively receiving information to being actively involved in their own learning (United Nation, Educational, Scientific, and Cultural Organization, (UNESCO) (2005) Therefore, information and communication technology is the use of computer and telecommunication facilities to store and retrieve information from various sources, generate and transfer ideas, and also impart knowledge to recipients. In views of the meaning of ICT as described above, it could be concluded that in order to prepare students for that kind of technology education, complete internet and intranet services should be made available in technical vocational education institutions.

The development and utilisation of ICTs in Technical Vocational Education and Training (TVET) have been one of the major area emphasized by (UNESCO, 2008), due to the fact that ICT tools are becoming inexpensive, reachable and interactive, in which their application into all levels of education is expected to be imperative in making educational results labour-market oriented, and in the transformation of contents, methodology, as well as promoting information literacy. Information literacy is predicted as a basic to human survival (ADB, 2009), in an increasingly digitalized world as it authorises individuals in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals (UNESCO, 2008). Information literacy is the sustaining force of a knowledge society (ADB, 2009). Basu and Majumdar (2009) noted the development of broadband communication services, the convergence or telecommunications with the computer and recent advances in the field of communication protocols through World Wide Web (WWW) have drastically changed the world scenario of business, commerce, education, research, governance, entertainment and various aspect of economic activity leading to a distance-fewer worlds.

In recognition of the prominent roles ICT plays in all aspects of human endeavour, successive Nigeria government has employed various monetary and policy initiatives to promote ICT usage in Nigeria. In 1998, the National Policy on Computer Education was released by the Federal Government of Nigeria (FRN), (1988). The policy document spelt out application of computer at various levels of the country's education system, and with issues related to basic objectives, hardware and software requirements. The implementation of the policy started with a training programme conducted for teachers across the country. Additionally, Nigerian National Policy for Information Technology was released in 2001 (FGN) (2001). Some of the strategies of human resources development stated in the ICT policy are; making the use of IT mandatory at all levels of educational institutions through adequate financial provision for tools and resources; and developing relevant IT curricula for the primary, secondary and tertiary institutions. One of the objectives of these strategies is to restructure the education system at all levels to respond effectively to the challenges and imagined impact of the information age.

Pearson (2009) viewed challenges as difficulties in a job or undertaking that is stimulating for one engaged in it. Something that, by its nature or character, serves as a call to battle, a tasking activity or a special effort is a challenge. Challenges in utilisation of ICTs in (TVET) institutions cannot completely be avoided, but can be managed and improved; and if well handled, for the effective functioning of TVET, there will be qualified workers for industries. As such, the need for effective utilisation of ICTs in TVET institutions remains a great challenge, considering the impact ICTs make in the world of work that needs a knowledgeable workers skilled in information technologies (Rojewski, 2009). By implication, the use of ICTs in the training, up-grading and re-training of workers is of paramount significance and an essential aspect of teaching's cultural toolkit in the twenty first century, affording new and transformative models of development (Leach, 2005). The aim of TVET is to prepare people for self-employment and to be a medium of evolution for people to the world of work; by making individual to have a sense of belonging in their communities. Consequently, TVET is seen as an instrument for reducing extreme poverty (Hollander and Mar, 2009). These distinctive features of TVET make ICTs application a mandatory component that can aid to achieve a sustainable and globally recognised workforce. ICTs according to Zarini et al. (2009) facilitate the development and strengthening of TVET around the world by enhancing networking and knowledge sharing opportunities.

As a result, application of ICTs into TVET changes the entire focus of manpower needs in the world; from skilled-based to ICT-Capable work force. Therefore, the demand of an effective ICT-based TVET is not an over generalisation. TVET, being one of the most distinguished fields of education right from Stone Age to the present era of industrial development, still maintain its tempo toward the infrastructural, industrial, human and material resources development. Therefore, a swift application of ICT resources into the teaching and learning process of TVET should be emphasised at all levels. The implication is for TVET institutions to further deploy and strengthen their commitment toward training and producing ICT-capable graduates that will meet up with the challenges of virtual workplaces. Thus, knowledge in the exploitation of ICTs is critical to the present day workers (Zarini et al., 2009). One of the possible means of acclimatizing TVET to develop human resources for the ever dynamic world of work is to focus its investment in the utilisation of ICTs in the curriculum implementation process (teaching and learning).

Statement of the Problem

Information Communication Technology (ICT) has the power to enable TVET students and staff enjoys things that they would normally find time-consuming and difficult. ICT is a teaching tool that improves the quality of TVE student's and support teachers' work inside and beyond the classroom. There is no gainsaying the fact that the application of ICT in TVET institutions will aid effective teaching and learning and help the students acquire necessary vocational skills that will enable them contribute to the growth, improvement and development of the nation socially and economically (Hollander and Mar, 2009). The utilisation of ICT in

TVET Institutions is faced with many challenges. One of these challenges according to Osakwe (2012) is teachers' failure to help the TVET students develop the capacities necessary to take full advantage of the opportunities offered by ICTs and needs to acquaint the students with the strategies and mechanism of ICT. So far, ICTs have not been used as a way of acquiring new knowledge and skills in TVET institutions due to inadequacy of curriculum content and limited access to ICTs. Gbadamosi (2006) notes inadequate funding as a major challenge because it has negatively affected many areas of education in Nigeria; Areas it has affected according to Gbadmosi include funding of ICT projects, training and retraining of teachers, provision of technological infrastructure, development and maintenance of software packages and electricity, Ibadin (2001) also argued that there is acute shortage of well-trained ICT handlers. It is in the light of the foregoing that this paper deems it fit to critically examine the challenges facing utilisation of information communication technology (ICT) in Nigerian Technical Vocational Education Institutions to improve ICTs effectiveness in developing in students the necessary skills and competencies needed for getting, keeping, and doing well on a job.

Purpose of the Study

The purpose of the study was to find out the challenges of using Information Communication Technology (ICT) in Nigeria Technical Vocational Education Institutions and determine the various ICT resources available, major application of ICT, challenges faced in using ICT resources, and ways of improving uses ICT in technical vocational institutions.

Research Questions

The following are the research questions formulated for this study
1. What are the various ICTs resources available in developing in students the necessary skills and competencies in TVET institutions?
2. Do the challenges faced in using ICT resources in TVET institutions differ by gender, respondents' categories and computer experience?
3. Does the ways of improving use of ICT in TVET institutions differ by respondents' categories?

Review of Related Literature

Development in ICT has brought new teaching and learning opportunities to teachers and students. ICT has been found to encourage active learning, support innovative teaching, reduce the isolation of teachers, and encourage teachers and students to become active researchers and learners (Yusuf, 2007). Additionally, ICT supports holistic learning, collaborative grouping, problem-oriented activities and integrated thematic units. Teachers wishing to teach in this way will be both more efficient and effective if they employ ICT to reach their goals (Dellit, 2002). Cavas, et al., (2009) suggested that there are five important reasons for teachers to use ICT in education: (1) motivation, (2) distinctive instructional abilities, (3) higher productivity of teachers, (4) essential skills for the Information Age, and (5) support for new teaching

techniques. ICT has the capacity to affect the efficiency and productivity of technology teacher education programme. Within this context, UNESCO (2002) has noted that teacher education institutions need to develop strategies and plans to enhance the teaching-learning process within teacher education programmes and assure that all future teachers are well prepared to use the new technology tools for learning. According to Condie and Munro (2007) while ICT can be motivating and engaging students in learning more effectively, sustained impact depends on the ability of the teacher to integrate ICT into the learning experience of students in such a way that the potential of the technology is fully realised.

Effective utilisation of ICTs in TVET cannot be fully realised without some drawbacks, either material, or human. Several problems having direct bearing on the topic under discussion were identified by researchers and educators. Studies on the extent to which ICTs are applied to general educational fields and TVET reveals some challenges encountered by stakeholders toward successful utilisation of ICTs, for example, lack of time in the preparation of teaching materials and lack of knowledge and skills for the presentation of advanced ICT teaching materials manifested in a study conducted in VTET Institutions in Malaysia (Saud et al., 2010); cost and access (security, purchase, software and maintenance), inadequate technical and administrative staff and insufficient time to plan instruction (Collins and Halverson, 2009); beliefs about teaching, about computers, established classroom practices and unwillingness to change (Lawrence, 2007); lack of funds (Jantrakool, 2010) for training, unstable electricity supply and lack of ICT awareness among principals.

Despite its numerous contribution, available and functional infrastructures, sophistication in technology and continues provision and upgrade by schools, ICTs full utilisation in teaching and learning process is still in progress (Hayes, 2007). Hayes further stated that teachers slowness to adopt ICT reflects their effort to discern how best to incorporate new technologies into old teaching practices. Study in south East Asian countries reveals that, the progress toward full integration of ICTs in education, especially TVET, require additional commitment from teachers (Paryono and Quito, 2010). While ICTs provides a platform for virtual manipulation of skills, TVET emphasise hands-on experience among learners. As such, the critical challenge lies in the possibility of ICTs to substitute physically trained specialist/instructors and training facilities. In view of the aforementioned fact, ICTs can only replace a portion of hands-on experience where manual skills are necessary requirements in teaching and learning process (Zarini et al., 2009). Though ICTs are crucial component that no training programme (TVET) can afford to neglect, face-to-face interaction among learners and between a learner and a teacher equally holds great promise. Teacher training and retraining are major challenges for the integration of technology-based learning since for most teachers ICTs are both invigorating in their potential and intimidating in the improbability created by the speed of change.

The most pressing challenges to the effective utilisation of ICTs in TVET institutions according to Kotsik et al.(2009) includes; content and curriculum; appropriateness and efficacy; quality and branding of ICT-mediated learning; stakeholders' resistance; lack of appropriate software; the digital divide; the cognitive and copy right issues. Albirini (2006) found lack of

teacher competency, and lack of access to computers by teachers in schools as a main obstacle to their acceptance or rejection, but the finding is not connected to negative attitude toward computers also identified by his study. As such, serious work needs to be done to curtail the worseness of the 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, among others. Louw et al. (2009) in their study instructional technologies in social science instruction in south Africa; teachers reported some factors that constraint their use of ICTs, the major ones include; inadequate technology (network connection), pedagogical issues, (for example, plagiarism), lack of time to develop or adapt ICT materials, and integrating into courses.

Studies on gender difference in attitude have produced conflicting results. Cavas et al (2009) found no significant difference between ICT attitudes of Turkish science teachers in term of gender. Similarly, Bakr (2011) investigated gender differences in attitude towards computers of Egyptian teachers. The study revealed no significant gender differences among the teachers' attitude towards computer. Based on the scores, female teachers have relatively higher attitude towards computers than males. Teo (2008) found no significant difference between the pre-service teachers' attitude and gender. Tezci (2010) conducted a study on attitudes and knowledge level of Turkish primary schools teachers in ICT use. Result of the study indicated that, there were significant differences between male and female teachers in terms of frequency of ICT use and Internet attitude in favor of males. However, there were no significant differences between male and female teachers in terms of their attitude scores

According to Wood, Putney and Cass (1997) computer ownership and access to computer were best predictors of perceived computer competence. Access to computer and other ICT equipment at home and at school have been found to influence teachers' attitude to ICT usage. BECTA (2004) reported that teachers' confidence in using ICT is directly affected by the amount of personal access to ICT they have at home. Russell and Bradley (1997) found that access to computers at home and at schools was seen as important by many teachers in Australia, as teacher commented that if they had computers at home they would get more into it. Furthermore, the link between computer anxiety and access to the technology was further emphasized by the teachers who commented that most anxiety about computers is generated by the fact that access to computers is limited. However, study conducted by Sadik (2006) in Egypt found out that ownership of home computer was not significantly associated with their attitudes towards computer technology. The study concluded that teachers' anxiety, confidence, liking and perception of usefulness of computer technology were independent of the ownership of a computer.

TVET teachers' competency in computer technology is essential if they are to be successful instructional leaders as they use and transfer this competency to their students (Buntat, et al. 2010). Teachers' ICT confidence, liking and anxiety levels are related to teachers' ICT competence. Teachers who are not well skilled in using ICT feel anxious about using it in front of students (Darus and Luin, 1996; BECTA, 2004). The implication of this is that, effective ICT

training is essential to improving teachers' competence which in invariably would help improving teachers' attitude to use of ICT for instructional activities. Russell and Bradley (1997) reported that, teachers who had received computer instruction at university or through external agencies were more likely to be competent in use of computers. Lee (1997) however, noted that many teachers "of advanced age" will not have had any computer education when in college, and as a result are in need of computer skills training to allow them to make use of computers in their work. If training is inadequate or inappropriate, then teachers will not be sufficiently prepared, and perhaps not sufficiently confident, to make full use of ICT in and out of the classroom. In this context, BECTA remarked that the lack of teacher competence, together with the associated lack of quality training for teachers, can be seen as a challenge to teachers' use of ICT.

Methods

The research employed descriptive survey research design. One hundred and five (105) lecturers and administrators in TVET institutions in south-western Nigeria participated in the study.

The instrument for data collection consisted of a structured questionnaire and open interview developed for the study. The instrument has four sections 'A', 'B', 'C' and 'D'. Section "A" sought information on personal data of the respondents such as gender, access to ICT, and categories of respondents. Section 'B' contains items about various ICT resources available in TVET institutions. Section 'C' contain items on challenges faced in using ICT resources in TVET institutions and section 'D' contain items on ways of improving uses ICT in TVET institutions, the items were structured on a likert-scale, the questionnaire was subjected to face and content validation by research experts in Department of Science and Technology Education, University of Lagos. The reliability of the items was determined using Cronbach alpha. The results of Cronbach Alpha reliability test indicated alpha coefficient of .90 for various ICT resources, .89 for challenges of using ICT in TVET institutions and .90 for ways of improving uses of ICT. Open-ended interviews were carried out to supplement the questionnaires. The questionnaire was administered to respondents by personal contacts and through research assistants. Out of One hundred and five (105) questionnaire administered to the respondents eighty four (84) were retrieved. The return rate was 88.2%. Interviews were carried out with the deans, heads of department and computer operators from whom additional valuable information to supplement data obtained from the questionnaire was gathered. Data generated from the questionnaire were analyzed using mean, standard deviation, t-test statistics and analysis of Variance (ANOVA) at .05% level of significance, using SPSS package.

Results

ICT facilities available in TVET institutions

Results presented in Table 1 revealed the average score of lecturers and administrators in TVET institutions on the ICTs resources available for developing in students' necessary skills and competence. The results shows that ICT facilities are rarely available as the majority of respondents scored below 3.50 cut-off points

except on computers (software and hardware) are available for use in our TVET institutions; students and staff have access of sending mail through electronic; computer rooms are well furnished with computers for use and electric generators are available to power computers when there is power failure, with means of 3.67, 3.90, 3.76 and 3.64. Also, a close at the overall mean score of (22.48) shows that the majority of TVE lecturers and administrators responses shows that ICT facilities in TVET institutions are not often available. In addition, a further examination of mean differences between the administrators and lecturers showed that lecturers scored slight higher (22.86), than the administrators with mean scored (21.62)

Table 1

Mean score of responses on ICT Facilities Available in TVET Institutions =84

S/no	ICT facilities available in TVET institutions	Mean $\overline{X}$	SD
Fac.1	Computers (software and hardware) are available for use in TVET institutions.	3.67	.729
Fac.2	I enjoy Internet facilities in the institutions	2.70	1.19
Fac.3	There are large numbers of laptop and desk top for administrative and teaching use.	2.52	1.17
Fac.4	I enjoy working with multimedia any time in TVET institutions	2.30	.94
Fac.5	Seminars and project presentation are present through Videoconferencing	2.22	.99
Fac.6	Students and staff have access of sending mail through electronic	3.90	.40
Fac.7	There is telephone facilities in the institutions for easy communication	2.39	.99
Fac.8	There is an opportunity of using satellites systems for presentation.	2.44	1.10
Fac.9	The school networking system is effective for communication.	2.36	.94
Fac.10	The computer rooms are well furnished with computers for use	3.76	.65
Fac.11	I appreciate working with IPod than lap top	1.90	.79
Fac.12	Electric generators are available to power computers when there is power failure.	3.64	.77
	Total/Overall mean on available ICT facilities in TVET institutions	22.48	6.77

Table 2 presents lecturers and administrators average mean score on application of ICT facilities in TVET institutions in developing necessary skill and competencies in TVET students. The responses of lecturers and administrators in TVET institutions revealed that ICT facilities are used for keeping and accessing student records; student on-line registration; preparation of examination questions and materials and preparation of student results, with mean scores 3.56, 3.63, 3.57 and 3.90 respectively. A closely look at the result shows that respondents responses confirm that they are not using ICT for preparation of on-line lectures in modules; keeping of inventory records; presentation of seminars and theses through videoconferencing; uploading of course materials for student access and training classes through online tutorials with means ranges from 2.43 to 3.40. A further examination of mean differences between respondents showed that administrators score (29.91) slightly higher than lecturer on the application of ICT (28.99)

Table 2

Application of ICT facilities in TVET institutions   N=84

S/no	Items Statements	Mean $\overline{X}$	SD
ICT app.1	Keeping and accessing student records	3.56	.79
ICT app.2	Student on-line registration	3.63	.93
ICT app.3	Preparation of on-line lectures in modules	2.53	1.10
ICT app.4	Preparation of examination questions and materials	3.57	1.18
ICT app.5	Budgeting and processing of finance records	3.40	1.07
ICT app.6	Preparation of student results	3.90	.40
ICT app.7	Keeping of inventory records	2.39	.99
ICT app.8	Presentation of seminars and theses through videoconferencing	2.43	1.10
ICT app.9	Uploading of course materials for student access	2.46	.94
ICT app.10	Training classes through online tutorials	2.98	.95
	Overall mean on application of ICT facilities in TVET institutions	**29.27**	**3.20**

Gender Difference on the Challenges Faced in Using ICT resources

In order to determine gender difference on the challenges faced in using ICT resources in developing required skill and competence, an independence sample t-test was conducted to compare the mean scores of male and female lecturers and administrators on the challenges in utilising ICT resources. The independent sample t-test scores were presented in Table 3.

Table 3

t-test Results of Gender Difference on Challenges Faced in Utilizing ICT in TVET institutions N=84

	Gender	N	$\overline{X}$	SD	t-cal	ρ
Challenges	Male	60	50.33	7.14	.127	.899
	Female	45	50.15	7.05		

As seen in Table 3, male lecturers and administrators had relatively higher mean scores than the female lecturers and administrators on the challenges faced in using ICT resources in developing required skill and competence in TVET students. However, there were no statistically significant differences between the males and females mean scores on challenges faced in using ICT resources in TVET institutions (t=.127,ρ>.05). The results show that gender does not influence challenges faced in using ICT resources in TVET institutions

Categories of Respondents Difference on Challenges Faced in Utilizing ICT in TVET Institutions

To investigate challenges faced in utilizing ICT resources by categories of respondents were categorized into two. Lecturers and administrators, an independence sample t-test was conducted to compare the mean scores was used to analyze the mean scores of the two groups and their ICT challenges, presented in Table 4

Table 4

t-test Results of Categories of Respondents Difference on Challenges Faced in Utilizing ICT in TVET Institutions N=84

	Category of Resp.	N	$\overline{X}$	SD	t-cal	ρ
Challenges	Lecturers	73	49.88	7.20	-.831	.408
	Administrators	32	51.13	6.79		

As shown in Table 3, lecturers had relatively higher mean scores than the administrators on the challenges faced in using ICT resources in developing required skill and competence in TVET students. However, there were no statistically significant differences between the lecturers and administrators mean scores on challenges faced in using ICT resources in TVET institutions (t= -.831,ρ>.05). The results show that categories of respondents does not influence challenges faced in using ICT resources in TVET institutions.

Challenges faced in utilizing ICT in TVET institutions by Computers Experience

To investigate challenges faced in utilizing ICT resources in developing required skills and competence by computer experience, years of computer experience were categorized into

three levels: 0-5 year, 6-10 years, and 11 years and above. The ANOVA was used to analyze the mean challenge scores of the three groups and their ICT challenges, presented in Table 5

Table 5

ANOVA results of Challenges faced in utilizing ICT in TVET institutions by Computer Experience N=84

	Years of computer experience	*N*	$\overline{X}$	*SD*	**F**	ρ
Challenges	0-5	15	49.53	7.97	.159	.854
	6-10	52	50.61	6.54		
	11 years and above	38	50.05	7.55		

As shown in Table 5, there were no statistically significant differences between the computer experience groups means scores on challenges faced in utilizing ICT resources in TVET institutions in developing required skills and competence (F=.159,ρ>.05) The results showed that lecturers and administrators were not influenced by their computer experience in challenges faced in utilising ICT resources.

Ways of Improving Use of ICT Resources in TVET Institutions

An independent-samples t-test was conducted to compare lecturers and administrators on ways of improving use of ICT resources in TVET institutions towards developing the required skills and competence. The mean scores, standard deviations and t-test results of the two groups were presented in Table 6.

Table 6

t-test Results of Respondents on Ways of Improving use of ICT Resources in Developing Required Skill and Competence in TVET Institutions N=84

	Category of Resp.	*N*	$\overline{X}$	*SD*	**t-cal**	ρ
Challenges	Lecturers	73	45.18	4.16	.270	.788
	Administrators	32	44.94	4.29		

Table 6 shows that there were no statistically significant differences between the two groups means scores on ways of improving use of ICT resources in TVET institutions towards developing the required skills and competence. (t= .270,ρ>.05). The results showed that ways of improving use of ICT resources in TVET institutions were not influenced by categories of respondents. A cursory look at the lecturers mean (45.18) shows that it is slightly higher that administrators mean (44.94)

Discussion of Findings

Challenges are measured in terms of difficulties in a job or undertaking that is stimulating for one engaged in it. Effective utilisation of ICTs resources in TVET cannot be fully realised without some drawbacks, either material, or human. Several problems having direct bearing on utilisation of ICT for developing required skill and competence were identified by researchers. The study identified a number of factors which influenced utilisation ICTs resources in TVET institutions in developing required skill and competence in TVET students, either in a facilitative or hindering way. Among the challenges identified are in the area of irregular power supply to use computer in TVET institutions; lack of computers accessories, software packages and maintenance, inadequate funding of ICT projects, training and retraining of teachers and provision of technological infrastructure; lack of appropriate software to use by teachers in TVET institutions; insufficiency of computer hardware and software for teaching purposes and available computers are not compatible with the new generation computers among others. The total mean score (50.25) could be attributed to the fact that the lecturers and administrators are facing challenges in use if ICT resources.

The findings however supports previous studies on utilisation of ICTs as applied to general educational fields and TVET reveals some challenges encountered by stakeholders toward successful integration of ICTs, for example, lack of time in the preparation of teaching materials and lack of knowledge and skills for the presentation of advanced ICT teaching materials manifested in a study conducted in VTET Institutions in Malaysia (Saud et al., 2010); cost and access (security, purchase, software and maintenance), inadequate technical and administrative staff and insufficient time to plan instruction (Collins and Halverson, 2009); beliefs about teaching, about computers, established classroom practices and unwillingness to change (Lawrence, 2007); lack of funds Gbadamosi (2006), (Jantrakool, 2010) for training, unstable electricity supply and lack of ICT awareness among principals. Pelgium (2001) lack of teachers' ICT-related knowledge and skills is a major obstacle to teachers' instructional use of ICT. In Nigeria, it has been observed that one of the barriers to ICT integration in school is teachers' lack of competency due to lack of time for training, pedagogical training, and ICT focus initial teacher training (Yusuf, 2007). As such, serious work needs to be done to curtail the worseness of the 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.

The finding of the study on application of ICT resources in TVET institutions under study, it was found that ICT use was most pronounced for preparation of student results with a mean of (3.90) keeping and accessing student records (3.56); student on-line registration (3.63); preparation of examination questions and materials (3.57); out of a scale of 1-5. Lecturers and administrators used ICTs for these tasks. ICT was very rarely used in the preparation of on-line lectures in modules; uploading of course materials for student access; training of classes through online tutorials and presentation of seminars and theses through videoconferencing with means score below 3.50 cut-off points ranging from 2.43 to 2.98. This suggests that these are tasks that

were performed by few lecturers and administrators using ICTs resources. The findings of the study were in support of Louw et al. (2009) who found out that ICT are used for instructions purposes David and John (2010) was mainly for the facilitation of clerical activities and to a limited extent, other administrative duties, particularly processing of examinations, the power of ICT in timetabling, student records and other record keeping, financial management and decision making. BECTA, emphasised on the issue of training of lecturers and administrators on how to use ICT to effectively manage student's learning, both during the lesson and also in the preparation of lessons beforehand (pedagogical training), rather than simply training them in the skills of using ICT equipment, is an important one.

The findings of this study revealed no significant difference between the challenges faced in utilising ICTs resources of lectures and administrators and their gender. This would suggest that male and female lecturers and administrators have the same observation about challenges in using ICT use in TVET institutions. This finding is consistent with other studies which found no significant differences in challenges in utilisation ICT by gender (Bakr, 2011; Cavas et al, 2009; Teo, 2008). However, this finding is different from the finding of Tezci (2010), who found that, there were significant differences between male and female teachers in terms of frequency of ICT use and Internet attitude in favor of males.

Findings of this study revealed that there were no statistically significant differences between the computers experiences in groups mean scores on the challenges faced in utilising ICT resources. A further examination of the mean scores showed that 6-10 and 11 years and above score (50.61, 50.05) slightly higher than the 1-5 years (49.53) it is believed that the higher the computer experience the higher the mean scores which suggests that lecturers and administrative computer experience will positively influenced ICTs utilisation. However, the findings is different from Huang and Liaw (2005) who stressed that the length of computer use is associated with the successful utilisation of ICTs in TVET changes the entire focus of manpower needs in the world; from skilled-based to ICT-Capable work force. This is corroborated by Sadik (2006) who found that teachers who have high computer experience have higher confidence, positive feelings and high perception of computer usefulness.

Findings on ways of improving use of ICT resources in TVET institutions towards developing the required skills and competence, the study identified a number of factors which influenced utilisation ICTs resources in TVET institutions in developing required skill and competence in TVET students as revealed from the study include; physical facilities and material resources such as computer rooms, furniture, and electric generators should be provided in institutions; TVET institutions should improve on train and retrain personnel on ICT programme management; TVET teachers should be made to designing and delivering courses/lectures in electronic formats; stakeholders in TVET programme should be made to support TVET institutions with ICT facilities; appropriate software to use by teachers in TVET institutions should be made available and Teachers should develop skills in creating module of courses for TVET students. The finding is consistent with Zarini et al. (2009) who suggests that one of the possible means of acclimatizing TVET to develop human resources for the ever

dynamic world of work is to focus its investment in the integration of ICTs in the curriculum implementation process (teaching and learning). Osakwe (2012) posits that the government should provide basic facilities and necessary infrastructure for the promotion of ICT at all levels of education. Mumeu & Ushel (2011), up-grading and re-training of workers

Implication of the Findings

The study has show that Government policy makers, curriculum implementers through TVET institutions has to further deploy and strengthen their commitment toward training and producing ICT-capable graduates that will meet up with the challenges of virtual workplaces. Thus, knowledge in the exploitation of ICTs is critical to the present day workers. Implication for the lecturers is develop their personal, social, occupational and educational goals in the use of ICTs in the training, up-grading and re-training of workers is of paramount significance and an essential aspect of teaching's cultural toolkit in the twenty first century, affording new and transformative models of development. The implication also poses a great challenge to stakeholders, stakeholders in TVET programme should be made to support TVET institutions with ICT facilities through provision physical facilities and material resources such as computer rooms, furniture, and electric generators should be provided in institutions

Conclusion and Recommendations

The aim of TVET is to prepare people for (self-) employment and to be a medium of evolution for people to the world of work; by making individual to have a sense of belonging in their communities. These distinctive features of TVET make ICTs application a mandatory component that can aid to achieve a sustainable and globally recognized workforce. The findings of this study have shown that lack of time in the preparation of teaching materials, lack of knowledge and skills for the presentation of ICT teaching materials, inadequate technical and administrative staff and insufficient time to plan instruction, unstable electricity supply and teachers' competency are challenges to utilisation of ICT, it is recommended that utilisation of ICT can be improved by stakeholders in TVET programme to provide support for TVET institutions to provide funds and ICT facilities such as computer rooms, furniture, computers, and electric generators, training of lecturers and administrators in application and administrative software programmes for school administration needs to be undertaken by the TVET institutions training teachers, and TVET institutions should ensure that computers for teaching and administrative use are increased in number and are accessible to lecturers and administrators,

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