



ICT and Vocational and Technical Education in Tertiary Institution: A Case Study of College of Education Warri, Delta State, Nigeria

Minna-Eyovwunu, D¹, Akarue, B. O². & Obavwunuta, O. R³.

**Department of Agricultural Education
College of Education Warri, Delta State, Nigeria**

ABSTRACT

Information and communication technology (ICT) in vocational and technical education (VTE) in tertiary institutions was carried out to evaluate the roles and challenges of ICT in vocational and technical education. Survey method was used in carrying out this research. Sample size of (110) respondents were collected by simple random sampling techniques. The data collected were analyzed with descriptive statistics: means, standard error of means, frequency and percentages. The study reveals gross inadequacy of facilities to support full application of information and communication technology (ICT), irregular power supply amongst others hinders the effective integration of information and communication technology (ICT) in vocational and technical education (VTE). It also determined various roles of ICTs in VTE, among which are that ICT helps in distance learning programme; also helps in making teaching and learning more interesting; etc. The findings showed a significant inadequate availability and usage of (ICT) facilities for teaching and learning. It was recommended among others that information and communication technology (ICT) equipment and facilities should be adequately made available in the tertiary institutions for effective teaching and learning in vocational and technical education.

Keywords: Information and communication technology, vocational and technical education (VTE), tertiary institutions

INTRODUCTION

The increased use of information and communication technologies (ICTs) in technical and vocational education training (TVET) has resulted in a major paradigm shift; from a total dependence on the objectivist paradigm to a growing adherence to the cognitivist and constructivist paradigms. For instance the use of ICTs in distance education has brought about a teaching method, which is constructivist, cooperative and intuitive (Wonacott, 2001). ICTs are revolutionizing education by removing distance from education and making learning increasingly available to all (Industry Canada, 1997). Technology-enhanced learning will play a crucial role in the development of a lifelong learning culture and has the capacity to empower learners by providing them with multiple pathways that offer choice and channels to meet their education and training needs (Human Resources Development Canada, 1998). It is not surprising therefore, to see a growing interest in Technology – Based learning (TBL) across the world. TBL can enhance teaching and learning, it has the potential to become cost effective as it offers greater flexibility regarding time and location of training delivery (Furst-Bowe, 1996). Additionally, TBL may facilitate institutional policy regarding access and equity (Lafreniere, 1997). Technology also provides greater flexibility to adopt teaching and learning to meet learner's cognitive and learning styles. As averted by Dean (2000), Schank, the founder of cognitive Arts believed that educational institutions must

adopt a new way of teaching. He claims that students ‘‘ learn better through experiential and emotional learning rather than through memorizing names and dates’’ and thus educators must simulate real-world environment. ICT can be used to facilitate these types of environment. Bello, Shu'aibu, Saud, and Buntat, (2013) opined that full deployment of ICT in VTE training, students acquire adaptable employability aptitudes that will make them fit into the consistently changing work advertise without genuine challenges. All UNESCO member states are attempting to reform their TVET systems to make them more responsive to this new reality. Many countries are trying to harness the power of a comprehensive strategy to reform the TVET systems. However, there is a lack of systematic approach for evaluating ICT usage in education.

Federal Government of Nigeria [FGN],(2004) also emphasized the use of ICTs at all levels of Nigerian education in which TVET institution are inclusive. The policy statements are:

- i) All States, teachers’ resource centers, university, institutes of education, and other professional bodies in education shall belong to the network of ICT (section II, sub-section 102(a) p.53).
- ii) Government shall provide facilities and necessary infrastructure for the promotion of ICT and its use as learning tools at all levels of education (section II, subsection 102(d) p.53).
- iii) Virtual library project, aimed at the rejuvenation of the Nigerian schools through provision of easy access to current books, journals and other information sources using digital technology was also included. However, these policy objectives were yet to be realized.

The term vocational and technical education (VTE) as used in this article is in accordance with the 1997 UNESCO international standard classification of education definition, which is education and training to ‘‘acquire the practical skills, know-how and understanding necessary for employment in a particular occupation, trade or group of occupations or trades’’. It is important to note that VTE is not only about knowing how to do things but also understanding why things are done in a particular way. The conceptual definition of VTE cuts across educational levels (post-primary, secondary, and even tertiary) and sectors (formal or school-based, non-formal or enterprise-based, and informal or traditional apprenticeship). It is important to note that UNESCO and ILO (2000) understood technical and vocational education to be: (i) a means of preparing for occupational fields and for effective participation in the world of work; (ii) an aspect of lifelong learning and a preparation for responsible citizenship and (iii) an instrument for promoting environmental sound sustainable development. Technical and vocational education and training (TVET) is back on the developmental agenda of many Africa countries including Nigeria after many years of being neglected, instigated by a complex set of reasons that included budgetary constraints and criticisms of world bank in the early 90’s on its direction and focus (Attwell, 1999). The World Bank had argued at the time that the cost of technical and vocational education was too high compared with the returns to the economy, that the quality of training was poor and that there was considerable mismatch between training and the needs of industry. Simply put, the delivery of vocational education and training was not cost effective. However, since the beginning of the new millennium, a fresh awareness of the critical role that TVET can play in economic growth and national development has dawned among policy makers in many African countries including Nigeria and within the international donor community. One of the most important features of VTE is its orientation towards the world of work and the emphasis of the curriculum on the acquisition of employable skills. VTE delivery systems are therefore, well placed to train the skilled and entrepreneurial workforce that Nigeria needs to make riches and develop out of neediness (Okorie, 2004). Oguntuyi, (2013) stated that VTE can be delivered at different levels of sophistication as an important characteristic of VTE. This means that VTE can responds, not only to the needs of different socio-economic and academic backgrounds, and prepare them for gainful employment and sustainable livelihoods. A skilled workforce is a basic requirement for driving the engine of industrial and economic growth, and VTE holds the key to building this type of technical and entrepreneurial workforce. However, the approaches to working and learning are in very high demand more than ever before which is as a result of the complexity of the present world of work that necessitate the institutions to infuse their student with functional lifelong learning skills in order to meet up with the challenges of the twenty-first century (Idris, 2010). Indeed, according to (Saud, Shu'aibu, Yahaya, & Yasin, 2011) the

development and fortification of TVET can be accomplished by effective integration of ICTs into TVET through upgrading, systems administration and information sharing open doors which will thus offer students individualize adapting even after school hours.

Malgwi and Mbah, (2012) averted that TVET is the industrial facility for creation of required technologist, specialists and professionals' factory for production of needed to turn the nation's economy around. Moreover, TVET is one of the field of study that requires full deployment of information and communication technologies (ICTs), especially in the present age where the universe of work is quickly changing its prerequisite for labourers from aptitude based to an ICT fit (Aliyu, 2012). Olelewe & Amaka, (2011) stated that if ICT should properly be utilized in TVET programmes; it will improve the nature of instruction and training in a few different ways which incorporates empowering the securing of essential abilities, expanding students' inspiration and commitment, and furthermore upgrading teacher training.

Yusuf, (2005) averted that the most common problems associated with the effective integration of ICT in general educational system in Nigeria are: Lack of qualified ICT personnel, cost of equipment, management's attitudes, inconsistent electric power supply, non-inclusion of ICT programmes in teachers' training curricula. While Adeosun, (2010) opined that ICT integration are deficient with regards to human asset advancement as far as skilled educators to utilize ICT in instructing and learning forms, just as ICT infrastructures. Similarly, technical challenges for most institutions to successfully integrate ICT into learning and teaching in particular, is the high cost of internet bandwidth and it is clear that institutions do not have the technical ICT expertise to produce articulated strategies for the on-going development of their ICT infrastructure. Stevens (2001) identified five barriers related to the implementation of ICT-mediated learning in TVET, namely: content and curriculum, appropriateness and efficacy of technologies, quality and branding of programmes, stakeholders' resistance to innovations, and the digital divide. The Conference Board of Canada (2000) also asserted nine of the most common challenges faced by employers who have attempted to use ICTs for workplace learning. These are: lack of time, money and support; technological and systemic limitations; difficulty of using ICTs; no evaluation of outcomes; resistance to change; lack of planning; lack of communication; lack of leadership; and learner resistance. Several authors (Okorie, 2011; Okeke & Eze, 2010; Etuk & Asokwu, 2015) opined that poor funding, curriculum defect, inequity in urban/ rural deployment of VTE teachers; amongst others are challenges ICT in vocational and technical education.

Statement of the problem

The place of ICTs in bringing the expected change in VTE cannot be overemphasized; the need for functional VTE around the world is quite fundamental to the socio- economic growth of any economy; most especially in a developing economy like Nigeria. Nigeria as a developing nation has not fully integrated ICT in VTE, in spite of the significant roles of ICT in enhancing the teaching and learning process; and the overall standard of vocational and technical education to meet up with the challenges in the real world of work. Therefore, the statement of the problems of this study is to examine the role of ICTs in vocational and technical education in tertiary institution: A case study of College of Education Warri, Delta State, Nigeria.

Objectives of the study

The main objective of the study is to investigate the place of ICTs in vocational and technical education in tertiary institution: A case study of Colleges of Education Warri, Delta State. Specifically, the study is required to determine:

- The importance of ICT in vocational and technical education
- ICT facilities available and used for teaching and learning in VTE
- The challenges of ICT in vocational and technical education

Research questions

The study needed to answer the following research questions:

- What is the importance of ICT in vocational and technical education?

- What are the ICT facilities available and used for teaching and learning in VTE?
- What are the challenges of ICT in vocational and technical education?

RESEARCH METHOD

The study was carried out using descriptive survey method. Population of the study comprised of all the lecturers and students from the School of Vocational and Technical Education, College of Education, Warri, Delta State. A total of 110 respondents which is made up of 70 students and 40 lecturers were randomly selected from the School of Vocational and Technical Education; College of Education, Warri. A well-structured open ended questionnaire was used to generate quality information from the respondents. The instrument is made up of four sections: section A deals on demographic characteristics of the respondents; while sections B, C, and D are designed to draw information on importance of ICT in VTE; ICT facilities available and used for teaching and learning in VTE; and the challenges of ICT in vocational and technical education; respectively. Questions were structured in line with the principle of five point Likert scale of measurement. Data collected were subjected to descriptive statistics: mean, frequency, and percentage. The mean point of five point Likert scale of measurement was used in the determination of the importance of ICT in VTE; ICT facilities available and used for teaching and learning in VTE; and the challenges of ICT in vocational and technical education; respectively. The mean value of 3.00 was used as the cut-off point of the Likert scale of measurement. Data collected were analyzed using the SPSS statistical package version 20.

RESULTS AND DISCUSSIONS

Table 1. Frequency distribution of the demographic characteristics of the respondents

Characteristics	Frequency	Percentage
Gender		
female	71	64.50
male	39	35.50
Age		
20-29 years	66	60.00
30-39 years	10	9.10
40-49 years	12	10.90
50 years above	22	20.00
Marital status		
single	64	58.20
married	46	41.80
Qualification		
Ph.D	9	8.20
MSc./M.ED	26	23.60
B.Sc./ED&HND	5	4.50
NCE/OND	70	63.60
Teaching experience		
1-10 years	15	37.50
11-20 years	13	32.50
21-30 years	4	10.00
31-40 years	8	20.00

Source: Field survey, 2019

Table 1 above revealed that the majority of respondents are female 71 (64.5%); and 66 (60.0%) of the students sampled are within the age range of 20-29 years; and 64 (58.2%) are single; 70 (63.6%) qualifications are NCE/OND; while 13 (32.5%) had 11-20 years teaching experience.

Table 2: Mean and Standard Error of Mean of the importance of ICT in VTE

S/N	Factors	No. of respondents	Mean	Standard error of mean	Remark
1	ICT help in distance learning programme	110	4.68	0.06	Accepted
2	ICT help in making teaching and learning more interesting	110	4.41	0.08	Accepted
3	ICT enhances quality of work of both teachers and students	110	4.41	0.07	Accepted
4	It makes teachers to be up-to-date in their various disciplines	110	4.33	0.09	Accepted
5	It help teacher to reach out to colleagues in other part of the country	110	4.40	0.07	Accepted
6	It help to reduce bureaucracy in administration	110	3.94	0.09	Accepted
7	It makes decision in the education sector easy and fast	110	4.09	0.10	Accepted
8	There is greater efficiency through-out the school	110	3.86	0.10	Accepted
9	It enhances professional image projected to colleagues	110	4.00	0.10	Accepted
10	It build confidence and enthusiasm in teachers and students	110	4.25	0.08	Accepted
11	Provision of guidance and counseling services to the students	110	3.83	0.10	Accepted
12	Relating work experience to work place	110	3.99	0.10	Accepted
13	Provides easier access to more extensive and current information	110	4.59	0.06	Accepted
14	Provides researchers with evidence for dissemination of research report and findings, changing content, methods and overall quality and quantity of teaching and learning	110	4.60	0.07	Accepted
15	Ensuring constructivist inquiry oriented lecture room	110	3.96	0.09	Accepted
16	Providing opportunities for individualization of instruction	110	4.21	0.08	Accepted
17	Prompt computation of examination results	110	4.41	0.08	Accepted
18	Ability to create, saves, edits and change worksheets	110	4.56	0.07	Accepted
19	Enhancing lecture delivery and scheme of work planning.	110	4.23	0.09	Accepted
20	Creating opportunities for the institutions to communicate with one another through e-mail, mailing list, chat room etc.	110	4.60	0.06	Accepted
21	Changing content, methods and overall quality and quantity of teaching	110	4.16	0.09	Accepted
22	Providing opportunities to work with interaction whiteboard in the lecture room	110	4.03	0.10	Accepted

Source: Field survey, 2019

As indicated in Table 2 above, all the importance or roles of ICT in VTE investigated had mean value greater than the mean point value of 3.00 set as acceptable mean value as earlier stated., hence they have are all been found to determine important roles of information and communication technology (ICT) in vocational and technical education (VTE) in the study area. The findings of this present study are in

agreement with the report of (Industry Canada, 1997; UNDP, 2001; Wonacott, 2001; Olelewe & Amaka, 2011; & Bello et al., 2013) as earlier stated.

Table 3: Frequency distribution table on ICT facilities available and used for teaching and learning in VTE

S/N	Facilities available and used for teaching and learning	Opinion		Total
		Yes	No	
1	computer	(60) 54.5%	(50) 54.5%	110 100
2	Computer training centre	(85) 77.3%	(25) 22.7%	110 100
3	Projector screen	(27) 24.5%	(83) 75.5%	110 100
4	Printer	(45) 40.9%	(65) 59.1%	110 100
5	Cyber cafe	(79) 71.8%	(31) 28.2%	110 100
6	Radio (Tape recorder)	(2) 1.8%	(108) 98.2%	110 100
7	Television	-(110) - 100%		110 100
8	Video	-(110) - 100%		110 100
9	Slides	(3) 2.7%	(107) 97.3%	110 100
10	Film trips	(5) 4.5%	(105) 95.5%	110 100
11	Scanning machine	(40) 36.4%	(70) 63.6%	110 100
12	Photocopy machine	(35) 31.8%	(75) 68.2%	110 100
13	Fax machine	(2) 1.8%	(108) 98.2%	110 100
14	Laptop	(63) 57.3%	(47) 42.7%	110 100
15	Electronic Notice Board	-(110) -100%		110 100
16	Software	(6) 5.5%	(104) 94.5%	110 100
17	Satellite dish	(20) 18.2%	(90) 81.8%	110 100
18	Networking system	-(110) -100%		110 100
19	CD-Runs	(52) 47.3%	(58) 52.7%	110 100
20	Computer laboratory	(46) 41.8%	(64) 58.2%	110 100
21	Internet	(63) 57.3%	(47) 42.7%	110 100
22	Computer board	(4) 3.6%	(106) 96.4%	110 100

Source: Field survey, 2019; *figures in parenthesis () are frequency values

From the findings in Table 3 Computer, computer training centre, Cyber cafe, Laptop and internet, with frequency and percentage value of 60 (54.5%), 85 (77.3%), 79 (71.8%), 63 (57.3%) respectively; are the ICTs facilities available and commonly used for teaching and learning in VTE in the study area. The result of this present study is in consonant with reports of (Ololube, Ugbogu & Egbezor (2007); Ani (2012); Oduma (2013); Hart, Emeli, & Okorogba, 2016) which opined that information and communication technology (ICT) facilities are not available for teaching and learning process in tertiary institutions in Nigeria.

Table 4: Mean, Standard Error of Mean of challenges of ICT in Vocational and Technical Education (VTE).

S/N	Challenges	No. of respondents	Mean	Standard error of mean	Remark
1	Irregular power supply hinders the use of computers in the institutions	110	4.60	0.08	Accepted
2	There are inadequate facilities to support full application of the ICT	110	4.33	0.07	Accepted
3	Teachers are very reluctant to adapt to the use of ICT in teaching and learning process	110	3.84	0.12	Accepted
4	Lack of interest in ICT application on the part of the students	110	3.41	0.13	Accepted
5	Poor perception of ICT among teachers and administrators	110	3.80	0.11	Accepted
6	Inadequate funding	110	4.35	0.08	Accepted
7	Lack of maintenance culture	110	4.23	0.11	Accepted
8	Inadequate ICT manpower in the school	110	4.16	0.10	Accepted
9	The cost of purchasing computers in the schools is high.	110	3.80	0.13	Accepted
10	Inadequate ICT compliance curriculum	110	3.86	0.11	Accepted
11	Non- use of appropriate and approved methodology	110	3.78	0.11	Accepted
12	Poor /shortage of qualified VTE teachers	110	3.78	0.12	Accepted
13	Poor public perception and apathy to VTE	110	3.80	0.10	Accepted
14	Lack of adequate equipment and infrastructural facilities	110	4.10	0.10	Accepted
15	Over crowded classes for VTE teachers trainees	110	3.48	0.13	Accepted
16	Inequity in urban/rural deployment of VTE teachers	110	3.86	0.11	Accepted
17	Non professionalizing the teaching profession	110	3.67	0.11	Accepted
18	Curriculum defect	110	3.68	0.11	Accepted
19	Poor remuneration of teachers/ technical personnel	110	4.08	0.09	Accepted

Source: Field survey, 2019.

As revealed in Table 4 all the investigated challenges of ICT in vocational and technical education in the study area had mean value greater than the mean point value of 3.00 earlier established as acceptable mean value; consequently ascertained possible constraints of ICT in Vocational and Technical Education in tertiary institutions in the study area. The findings of the present study are in alliteration with reports of

several authors (Conference Board of Canada 2000; Steven, 2001; Yusuf, 2005; Adeosun, 2010; Okeke & Eze, 2010; Okorie, (2011); Etuk & Asokwu, 2015) as prior expressed.

CONCLUSION

Information and communication technology (ICT) no doubt had a considerable influence in enhancing teaching and learning in VTE in tertiary institutions. However, there are determined limitations effecting the effective integration of information and communication technology (ICT) in Vocational and Technical Education. Conclusively, there is a gross shortage of availability and usage of Information and communication technology (ICT) facilities for teaching and learning in Vocational and Technical Education (VTE) in the area of study.

RECOMMENDATIONS

It is therefore recommended based on the findings of this study that:

- i. The government at different levels should make fund readily available to the institutions so as to enable them purchase and maintain the necessary ICTs facilities needed for effective teaching and learning in VTE.
- ii. It is advisable that all the tertiary institutions should purchase a generating plant that could supply power steadily. This has become inevitable because of the unstable power supply being experience in this country
- iii. Training and retraining programme should be organized by the various institutions of learning so as to outfit lecturers with the essential competency to upgrade their aptitudes in the usage of ICT facilities for effective teaching and learning process in vocational and technical education (VTE) in tertiary institutions.

REFERENCES

- Adeosun, O. (2010). Quality basic education imperative for use of ICT CICE Hiroshima University. *Journal of International Education Department of Arts and Social Sciences Development in Nigeria: Cooperation in Education*, 13(2), 193-211
- Aliyu, M. B. (2012). Integrating e-learning in technical and vocational education: A technical review. *International Journal of Academic Research in Business and Social Sciences*, 2 (5), 52-58
- Ani, A. (2012). Survey of accessibility and usage of information and communication technology among students of technical education in tertiary institutions, Niger State. Nigeria. *Journal of Education and Social Research*, 2(7), 12-18
- Attwell, G. (1999). CDEFOP research resource base on ICTs and vocational education and training: An introduction and guide. CDEFOP: Germany p1.
- Bello, H., Shu'aibu, B., Saud, M. S., & Buntat, Y. (2013). ICT Skills for technical and vocational education graduates' Employability World. *Applied Sciences Journal*, 23 (2), 204-207
- Conference Board of Canada (2000). Solutions for employers. Effective strategies for using learning technologies in the workplace. Knowledge Review Report
- Dean, K. (2000, August 17). Iconoclast Says Show, Don't Tell. Wired News. Retrieved October 28, 2002, from <http://www.wired.com/news/culture/0,1284,38169,00.html>
- Etuk, E. N., & Asukwo, O.U. (2015). Challenges of teacher education and teaching in Nigeria. *Journal of Research and Development in Education*, 5(2), 160-169.
- Federal Government of Nigeria (2004). National Policy on Education. Lagos: NERDC
- Furst-Bowe, J. A. (1996). An analysis of competencies needed by trainers to use computer-based technologies and distance learning systems. *Performance and Improvement Quarterly*, 9(4), 57-78.
- Hart, T.U., Emeli, E., & Okorogba, L. J. (2016). The availability and utilization of ICT facilities and materials in teaching and learning. *International Journal of Advanced Academic Research/ Sciences technology & Engineering*, 2(5), 20-25

- Human Resources Development Canada (1998). Updating essential skills for the workplace. Reference document coordinated for the Council of Ministers of Education, Canada, Third National Forum on Education: Education and Life – Transitions, St. John’s, Newfoundland.
- Idris, A. (2010). A strategy for delivering skills training to the door step of Nigerians National
- Industry Canada (1997). Preparing Canada for a digital world. Final report of the information highway advisory council. Communication Branch, Industry Canada, Ottawa: ON.
- Olelewe, C. J., & Amaka, E. N. (2011). Effective utilization of information and communication technology (ICT) for sustainable manpower development among computer educators in Colleges of Education in South East geo-political zone of Nigeria. Paper presented at the National Association of Technology Teachers (NATT) on technical vocational education and training (TVET) for sustainable industrial development in Nigeria (24th, Umunze Anambra State, Nigeria).
- Lafreniere, T. (1997). Towards well-balanced technology-enhanced learning environments: Preparing the ground for choices ahead. Reference document coordinated for the Council of Ministers of Education, Canada. Third National Forum on Education: Education and Life – Transitions, St. John’s, Newfoundland.
- Malgwi, A. P., & Mbah, C. O. (2012) Entrepreneurial prospects in the metal working industry: A challenge to technical Teacher education in Nigeria. *Nigerian Journal of Technology Teacher Education*, 3(1), 37-43.
- Oduma, J. (2013). Teacher education and information communication technology; In C.O. Nwahan, & F.O. Onyeagwu, (eds). *In search of excellence in teacher education in the 21st century*, Agor: Cee Emmy Iyke Venture
- Oguntuyi, A. N. (2013). A viable vocational technical education curriculum: A tool for economic and technology development in Nigeria. *Scholarly Journal of Education*, 2(2), 22-26
- Okeke, B. C., & Eze, C. P. (2010). Repositioning vocational and technical education for the 21st Century: Implications and challenges. *Journal of Vocational and Adult Education*, 7(1), 58-67
- Okorie, J. U. (2004). Manpower development in Nigeria; Technological growth of a developing nation. Being a paper presented at NDEC 6th Engineering conference held between 8th -9th November at the Conference hall, cultural centre Garriki (Area 10), Abuja.
- Okorie, J. I. U. (2011). Vocational industrial education, Bauchi: League of researchers in Nigeria (LRN).
- Ololube, N. P., Ubogu, A. E., & Egbezor, D. E. (2007). ICT and distance education programme in a Sub-Saharan African country: A theoretical prospectors. *Journal of Information Technology Impact*, 7(3), 184-194
- UNDP (2001). Information communication technology for development. No. 5, Pp1-31
- UNESCO and ILO (2002). Technical and vocational education and training for the twenty-first century: UNWSCO and ILO recommendations. Paris: Authors.
- Saud, M. S., Shu'aibu, B., Yahaya, N., & Yasin, M. A. (2011). Effective integration of information and communication technologies (ICTs) in technical and vocational education and training (TVE) toward knowledge management in the changing world of work. *African Journal of Business Management* 5(16), 6668-6673
- Stevens, G. (2001). Distance learning for technical and vocational education in Sub-Sahara Africa. The World Bank. Retrieved Feb. 9, 2003, from the World Wide Web: <http://www.gtz.de/wbf/bibliothek/detail.asp?number=1431>
- Wonacott, M. E. (2001). Keeping vocational/career-technical educators current. Trends and Issues Alert. 23. Retrieved January 2, 2003, from ERIC/ACVE Publications web site: <http://ericacve.org>.
- Yusuf, M. O. (2005). Information and communication technology and education: Analyzing the Nigerian national policy for information technology. *International Education Journal*, 6(3), 316-32