Full Length Research Paper

The role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria

Ben, Camilus Bassey¹ and Ashang, Michael Ushie²

¹Department of Vocational and Special Education, University of Calabar, Calabar – Nigeria.
²Agricultural Education Unit, Department of Vocational and Special Education, University of Calabar, Calabar, Nigeria.

Accepted 12 September, 2013

This research focused on the role of Information and Communication Technology (ICT) in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria. One research question and hypothesis were formulated to guide the study. The target population for this study was 2,420 respondents comprising 2,210 vocational education trainees and 210 vocational educators. A total of 221 vocational education trainees and 21 vocational educators were selected using simple random sampling technique. A structured questionnaire was used to elicit the needed information from the trainees and educators. The data collected were analyzed using mean and standard deviation to answer the research question and independent t-test statistic to test the null hypothesis at 0.05 level of significance. From the analyses, it was found out that ICT played significant role in skilled manpower development, especially in the area of engagement of vocational technical students, development of skilled ICT professionals, establishment of ICT human infrastructures, increased knowledge of computer, acceleration of capacity building, and strengthening vocational technical teaching in Nigerian higher institutions in Cross River State among others. Based on these findings, it was recommended among others that the government as a matter of priority should provide the necessary ICTs infrastructure, trained manpower, adequate budgetary allocation, and uninterrupted power supply to enhance sustainable beneficial role derivable from ICT application for skilled manpower development through vocational technical education in Cross River State, Nigeria.

Key words: Information and communication technology, vocational education, vocational educator, vocational education trainees.

INTRODUCTION

Information and Communications Technologies (ICTs) include technologies in which the computer plays a central role, such as Computer Assisted Language Learning (CALL), the Internet, and a variety of generic computer applications. Manpower development is partly determined by the ability to establish a synergistic interaction between technological innovation and human values. Nwagwu (2006) supported this when he asserted that the rapid rate at which ICTs have evolved since the mid 20th century as well as the convergence and pervasiveness of ICTs, give them a strong role in manpower development and globalization. Similarly, Brakel and Chisenga (2003) maintained that ICTs have a significant impact on all areas of human activity, particularly the technological development of any country (be it advanced or developing).
Vocational technical education is addressed in diverse perspectives. Kewey and Hamburger in Ben (2008) view vocational technical education as any education directed towards the preparation of individuals for skills performance task. The concept that is of interest to this paper is that put forward by Mbata and Robert in Ben (2010) who maintained that vocational technical education an aspect of education designed to develop skills, abilities, understandings, attitudes, work habits and appreciation encompassing knowledge and information needed by workers to enable them make progress in employment on a useful and productive basis. The central objective of vocational technical education centers on the achievement of socio-economic, industrial and technological objectives that will actually manifest themselves in economic stability, industrial harmony, technological advancement and improved standard of living for all. Therefore, the development of highly skilled manpower of a country is a function of its well placed priority on the standard of vocational and technical education.

ICTs have exerted tremendous influence on vocational technical education in recent years. Yusuf (2005) submitted that the field of vocational technical education has been affected by ICTs, which have undoubtedly affected teaching, learning, and research. In the same vein, Al-Ansari (2006) opined that a great deal of research has proven its benefits to the quality of vocational and technical education.

Improved higher education is essential to the creation of effective human capital in any country. The role of ICT in skilled manpower development through vocational technical education among higher institutions cannot be overemphasized. In this technology-driven age, everyone requires ICT competence to survive. Organizations are finding it very necessary to train and re-train their employees to establish or increase their knowledge of computers and other ICT facilities (Adomi and Anie, 2006; Tyler, 1998). This calls for early acquisition of ICT skills by vocational students. According to Lemke and Coughlin (1998) and Davis and Tearle (1999) in Esharenana and Emperer (2010), ICTs have the potential to accelerate, enrich, and deepen vocational technical skills, to motivate and engage vocational students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening vocational technical teaching in Nigerian higher institutions and helping schools change.

The ability to use computers effectively has become an essential part of everyone’s education. Reffell and Whitworth (2002) maintained that skills such as bookkeeping, clerical and administrative work, stocktaking, and so forth, now constitute a set of computerized practices that form the core IT skills package: spreadsheets, word processors, and databases. The demand for computer/ICT literacy is increasing in Nigeria, because employees realize that computers and other ICT facilities can enhance efficiency. On the other hand, employees have also realized that computers can be a threat to their jobs, and the only way to enhance job security is to become computer literate. With the high demand for computer literacy, the teaching and learning of these skills is a concern among professionals (Yusuf, 2005). This is also true of other ICT components.

Emuku and Emuku (2000) asserted that new instructional techniques that use ICTs provide a different modality of instruments. For vocational technical students, according to the authors, ICT use allows for increased individualization of learning. In schools where new technologies are used, students have access to tools that adjust to their attention span and provide valuable and immediate feedback for literacy enhancement, which is currently not fully implemented in the Nigerian higher vocational and technical education system. In a related view, Goshit (2006) stated that ICT integration and application in schools’ curriculum in Nigeria will prove beneficial in improving Nigeria’s vocational technical education system and giving vocational students a better education. The author further explained that a technologically-advanced workforce will lead to ICT growth in Nigeria, with the potential to improve military technology and telecommunications, media communications, and skilled ICT professionals who will be well-equipped to solve IT problems in Nigeria and other parts of the world if integrated into schools’ curriculum.

In a rapidly changing world, higher education is essential for an individual to be able to access and apply information as well as to develop specific skills for work. Upon this background, it is pertinent to investigate into the viability of ICTs in knowledge creation and awareness in higher institutions. This paper particularly dwells on the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria.

**Purpose of the study**

The purpose of this study was to determine the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria.

**Research question**

The following research question guided the study:

What are the roles of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria?

**Research hypothesis**

The following research hypothesis was tested at 0.05
level of significance:
There is no significant difference in the mean ratings of Vocational Education Trainees and Vocational Educators on the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria.

METHODOLOGY

The study employed a survey research design with the use of a structured questionnaire. The design is appropriate for the study since data were obtained from vocational education trainees and vocational educators through the use of structured questionnaire on the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria.

The study was carried out in Cross River State, Nigeria. The population for this study was 2,420 respondents comprising vocational education trainees and vocational educators from five major higher institutions that offer vocational technical education. These included University of Calabar, Calabar, Cross River State University of Technology, Calabar, Cross River State College of Education, Akamkpa, and Federal College of Education, Obudu. A sample of 221 vocational education trainees and 21 vocational educators was used in this study. A simple random sampling technique was used to select the sample of trainees and educators from each higher institution. The instrument for data collection in this study was a structured questionnaire designed to elicit needed information from the respondents. The questionnaire was made up of items reflecting on the roles of ICT in skilled manpower development through vocational technical education among higher institutions in the study area. The data were analyzed using mean and standard deviation to answer the research question. Independent t-test statistic was used to test the null hypothesis at 0.05 level of significance.

RESULTS

Research question

What are the roles of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria?

To provide answer to this question, a structured questionnaire on the roles of ICT in skilled manpower development through vocational technical education among higher institutions was presented to the respondents to indicate their opinions on the phenomenon. The result is presented in Table 1.

Table 1 shows the opinions of vocational education trainees and vocational educators on the roles of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria. All the 20 items recorded mean scores ranging from 3.26 – 3.50, which were above the mean rating of 3.00. Only one item recorded a mean score ranging from 3.00 – 3.26, which is the opinion of vocational educators on the establishment of ICT-based vocational technical facilities. The result is presented in Table 1.

Table 1. Mean ratings and standard deviation of vocational education trainees and vocational educators on the roles of ICT in skilled manpower development through vocational technical education among higher institutions

<table>
<thead>
<tr>
<th>S/N</th>
<th>Item statement</th>
<th>X</th>
<th>SD</th>
<th>RMK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motivation of vocational education students</td>
<td>3.50</td>
<td>0.53</td>
<td>Agree</td>
</tr>
<tr>
<td>2</td>
<td>Engagement of vocational education students</td>
<td>3.46</td>
<td>0.52</td>
<td>Agree</td>
</tr>
<tr>
<td>3</td>
<td>Establishment of ICT-based human infrastructure</td>
<td>3.28</td>
<td>0.46</td>
<td>Agree</td>
</tr>
<tr>
<td>4</td>
<td>Acceleration of capacity building</td>
<td>3.43</td>
<td>0.59</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>Deepening of vocational technical skills</td>
<td>3.43</td>
<td>0.59</td>
<td>Agree</td>
</tr>
<tr>
<td>6</td>
<td>Acquisition of ICT skills by vocational education students</td>
<td>3.47</td>
<td>0.61</td>
<td>Agree</td>
</tr>
<tr>
<td>7</td>
<td>Increased knowledge of computer</td>
<td>3.37</td>
<td>0.56</td>
<td>Agree</td>
</tr>
<tr>
<td>8</td>
<td>Relating school experience to work practices</td>
<td>3.43</td>
<td>0.58</td>
<td>Agree</td>
</tr>
<tr>
<td>9</td>
<td>Creation of economic viability for tomorrow’s workers</td>
<td>3.36</td>
<td>0.61</td>
<td>Agree</td>
</tr>
<tr>
<td>10</td>
<td>Strengthening of vocational technical teaching in Nigerian higher institutions</td>
<td>3.35</td>
<td>0.74</td>
<td>Agree</td>
</tr>
<tr>
<td>11</td>
<td>Enrichment of skills in bookkeeping</td>
<td>3.39</td>
<td>0.59</td>
<td>Agree</td>
</tr>
<tr>
<td>12</td>
<td>Competency in vocational administrative work</td>
<td>3.27</td>
<td>0.64</td>
<td>Agree</td>
</tr>
<tr>
<td>13</td>
<td>Acquisition of database management skills</td>
<td>3.30</td>
<td>0.60</td>
<td>Agree</td>
</tr>
<tr>
<td>14</td>
<td>Development of skilled ICT professionals</td>
<td>3.36</td>
<td>0.58</td>
<td>Agree</td>
</tr>
<tr>
<td>15</td>
<td>Establishment of ICT-based vocational technical facilities</td>
<td>3.42</td>
<td>0.62</td>
<td>Agree</td>
</tr>
<tr>
<td>16</td>
<td>Facilitation of acquisition of vocational technical competencies</td>
<td>3.33</td>
<td>0.67</td>
<td>Agree</td>
</tr>
<tr>
<td>17</td>
<td>Improvement of Nigeria’s vocational technical education system</td>
<td>3.28</td>
<td>0.69</td>
<td>Agree</td>
</tr>
<tr>
<td>18</td>
<td>Giving vocational technical students a better education</td>
<td>3.30</td>
<td>0.67</td>
<td>Agree</td>
</tr>
<tr>
<td>19</td>
<td>Building of strong value for technologically-advanced workforce</td>
<td>3.35</td>
<td>0.61</td>
<td>Agree</td>
</tr>
<tr>
<td>20</td>
<td>Facilitation of clerical skills</td>
<td>3.26</td>
<td>0.67</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Note: X = Mean, SD = Standard Deviation.
cut-off point of 2.50 on the four-point scale. The implication of this result was that both vocational education trainees and vocational educators agreed that ICT played significant roles in manpower development through vocational technical education among higher institutions in the study area. Data on standard deviation revealed that all items have values ranged from 0.46 – 0.74, indicating that there was less variability in the opinions of the respondents.

### Research hypothesis

There is no significant difference in the mean ratings of vocational education trainees and vocational educators on the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria.

Table 2 presents data on differences in the opinions of vocational education trainees and vocational educators on the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria. Data show that item 1–2, 4–8, 10-17 and item 19-20 recorded calculated t-values range -2.90 – 1.80. These values were less than the critical t-value of 1.960 at 0.05 level of significance and 240 degree of freedom. The implication of this result was that the null hypothesis was upheld for the 17 corresponding items. This indicated that there was no significant difference in the opinions of vocational education trainees and vocational educators on the role of ICT in skilled manpower development through vocational technical education among higher institutions, in these regard.

However, items 3, 9 and 18 recorded calculated t-value range 2.04 – 2.20. These values were greater than the Table t value of 1.960 at 240 degree of freedom. This implied that vocational education trainees and vocational educators differed in their opinions on the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, as it concerns establishment of ICT-based human infrastructure, creation of economic viability for tomorrow’s workers and giving vocational technical students a better education.

### DISCUSSION OF FINDINGS

Findings of this study revealed that there was no
significant difference in the opinions of vocational education trainees and vocational educators on the role of ICT in skilled manpower development through vocational technical education among higher institutions in Cross River State, Nigeria. Both respondents agreed that there was significant role played by ICT in skilled manpower development through vocational technical education among higher institutions specifically in the areas of motivation of vocational education students, engagement of vocational education students, acceleration of capacity building, deepening of vocational technical skills, acquisition of ICT skills by vocational education students, increased knowledge of computer, relating school experience to work practices, strengthening of vocational technical teaching in Nigerian higher institutions, enrichment of skills in bookkeeping, competency in vocational administrative work, acquisition of database management skills, development of skilled ICT professionals, establishment of ICT-based vocational technical facilities, facilitation of acquisition of vocational technical competencies, improvement of Nigeria’s vocational technical education system, building of strong value for technologically-advanced workforce, facilitation of clerical skills, establishment of ICT-based human infrastructure, creation of economic viability for tomorrow’s workers and giving vocational technical students a better education. This result agreed with the views of Adomi and Anie (2006) and Tyler (1998) who maintained that in this technology-driven age, everyone requires ICT competence to survive; and organizations are finding it very necessary to train and re-train their employees to establish or increase their knowledge of computers and other ICT facilities, which calls for early acquisition of ICT skills by students. Similarly, Davis and Tearle (1999), Lemke and Coughlin (1998) in Esharenana and Emperor (2010) asserted that ICTs have the potential to accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow’s workers, as well as strengthening teaching and helping schools change. In the same line, Reffell and Whitworth (2002) maintained that skills such as bookkeeping, clerical and administrative work, stocktaking, and so forth, now constitute a set of computerized practices that form the core ICT skills package: spreadsheets, word processors, and databases; thus necessitating the urgent need for the integration of ICT into higher institutions’ curriculum. In related view, Goshit (2006) stated that ICT integration and application in higher institutions in Nigeria will prove beneficial in improving Nigeria’s educational system and giving students a better education as well as developing skilled ICT professionals who will be well-equipped to solve IT problems in Nigeria.

Conclusion

Based on the findings, it was concluded that ICT plays a significant role in manpower development through vocational technical education among higher institutions in Cross River State, Nigeria. The adoption and use of ICTs in higher institutions have a positive impact on vocational technical teaching, learning, and research.

RECOMMENDATIONS

Based on the findings, the following recommendations are made:

1. Government should ensure that ICT policy statements in vocational technical education sector are translated into reality.
2. An ICT policy implementation commission should be created. This commission should be funded and given the power to provide ICT facilities among higher institutions and monitor their application and use.
3. All higher institutions offering vocational technical education in the study area should be made beneficiaries of ICT projects.
4. Computer/ICT education should be made compulsory for all vocational technical students.
5. Efforts should be made by Ministry of Education (at Federal and State levels) to employ vocational technical educators skilled in ICT to impart ICT skills to the students.
6. ICT should be prioritized in school budgetary allocation to these institutions.
7. The government after necessary funding should assign specific developmental projects to these institutions. This may in a way enhance our growth technologically.

REFERENCES

APPENDIX I

Instrument

Questionnaire on the role of ICT in skilled manpower development through vocational technical education

Part I: Personal data

Instruction: Please check (✓) as appropriate

Status: Vocational education trainees (✓) Vocational educators (   )

Year of study (For Vocational education trainees):

One (   )
Two (   )
Three (   )
Four (   )

Name of institution: ..................................................

Part II

Instruction: Please check (✓) in the response category as appropriate.

Key:

SA = Strongly Agreed
A = Agreed
D = Disagreed
SD = Strongly Disagreed

ICT plays vital roles in skilled manpower development through Vocational Technical Education among higher institutions in the following areas:

<table>
<thead>
<tr>
<th>S/N</th>
<th>Items</th>
<th>SA</th>
<th>A</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Motivation of vocational education students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Engagement of vocational education students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Establishment of ICT-based human infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Acceleration of capacity building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Deepening of vocational technical skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Acquisition of ICT skills by vocational education students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Increased knowledge of computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Relating school experience to work practices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Creation of economic viability for tomorrow’s workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Strengthening of vocational technical teaching in Nigerian higher institutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Enrichment of skills in bookkeeping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Enhancement of acquisition of competency in vocational administrative work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Acquisition of database management skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Development of skilled ICT professionals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Establishment of ICT-based vocational technical facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Facilitation of acquisition of vocational technical competencies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Improvement of Nigeria’s vocational technical education system
Giving vocational technical students a better education
Building of strong value for technologically-advanced workforce
Facilitation of clerical skills acquisition

APPENDIX II
VALIDATION LETTER
Department of Vocational and Special Education, Agricultural Education Unit University of Calabar, Calabar—Nigeria.
Date..............................

Dear Sir/Madam,

REQUEST FOR VALIDATION OF RESEARCH QUESTIONNAIRE

We are lecturers of the above Department and University currently undertaking a research project titled “The Role of ICT in Skilled Manpower Development through Vocational Technical Education among Higher Institutions in Cross River State, Nigeria”.

Attached is a draft copy of the questionnaire for the study. You are please requested to vet the items for clarity, relevance and total coverage for use in collecting the data. You are also requested to put down your comments and suggestions for improving the quality of the questionnaire.

Thank you for your prompt response

Sincerely,

Ben, C. B. and Ashang, M. U.
(Researchers)