ADEQUACY OF TECHNICAL EDUCATION TEACHERS AND MACHINERY FOR THE TEACHING AND LEARNING OF WOODWORK: A CASE STUDY OF A SOUTH-SOUTHERN NIGERIAN TECHNICAL COLLEGE

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Abstract

This paper examines the adequacy of Technical Education Teachers and machinery for the teaching and learning of woodworking trades in technical colleges with a focus on Sapele Technical College, Sapele, Nigeria. To guide the study, two research questions were raised and answered. A 21-item structured questionnaire was used for data collection. The instrument was validated by three lecturers in the department of technical and Business Education, Delta State University, Abraka, Nigeria. The reliability of the questionnaire was ascertained by the test-retest method with a coefficient of 0.78. Data collected were analysed using mean and standard Deviation. The results revealed that qualified teachers to teach safety and technical drawing are adequate. NCE and B.Sc. (ed) teachers are adequate. Teachers to teach woodworking trades are inadequate, while teachers who are ICT literate are inadequate. Holders of B. Tech (ed) certificates are inadequate. Based on the findings, it was recommended that (a) teachers in technical colleges should be computer (ICT) literate (b) ICT facilities should be made available in all technical colleges in Nigeria (c) Government and the private sector should provide equipment in existing technical colleges in Nigeria to improve instruction.

Introduction

Technical colleges are established by the Federal Government of Nigeria to prepare individuals to acquire practical skills, basic and scientific knowledge and attitude required by craft men and technicians at sub-professional level in order to achieve the goals of technical education, which shall be to:

1) Provide trained manpower in the applied sciences, technology and business particularly at craft, advance craft and technical levels.

2) Provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development.

3) Give training and impart the necessary skills to individual who shall be self-reliant economically.

In pursuance of the above goals:

(a) The main features of the curriculum activities for technical college shall be structured in foundation and trade modules.

(b) The components are general education, theory and related courses; workshop practice and Industrial training/production work (Federal Republic of Nigeria, 1998).

According to Digbori-Besmart (1994) the venue for acquiring practical skills by technical college students is the workshop. Technical college provide technical training in a number of courses.
including Automobile mechanics, Welding and Fabrication, Plumbing, Electrical/Electronics, Painting Furniture making, machine wood-working, carpentry and Joinery, etc. It appears that these courses are taught in technical colleges with inadequate equipment and facilities for effective teaching and learning process. In this study, adequacy of qualified technical teachers and machinery used in the teaching and learning process, to make lessons meaningful and understandable would be examined. This study aims to find out whether qualified technical education teachers and woodwork machinery for teaching and learning woodwork trades are adequate. Adequacy of technical education teachers and woodwork machinery will enable the learner to receive, understand, retain and apply the knowledge gained to achieve the goals of technical education.

**Purpose of the Study**

The study seeks to determine the:

1. Adequacy of qualified technical education teachers which include NCE (technical) education teachers holders of B.Sc. (ed) technical or B. Technology (ed) teachers.

2. Adequacy of woodwork machinery which include: portable circular saws, saber saws, portable electric drills, power planes, portable routers, portable sanders, radial saws, table saws and jointers, band saws, surfaces and lathe. These teachers and machinery are for improving teaching and learning woodwork in technical colleges with a focus on Sapele Technical College, Sapele, Nigeria.

**Research Questions**

1. How adequate are qualified teachers for the teaching and learning woodworking trades in technical colleges?

2. How adequate are woodworking machinery for the teaching and learning woodworking trades in Technical Colleges?

**Methods and Materials**

The study adopted descriptive survey method. The population was made up of all the 168 students in the woodwork programmes in Sapele Technical College, Sapele, Nigeria. No sampling took place because of the small nature of the population, so all the students in the woodworking trades were used for the study.

**Instrument**

A 21-item questionnaire designed by the researcher was used to elicit information from the respondents. Their opinions on adequacy of qualified teachers and woodworking machinery for the teaching and learning woodworking trades were sought. Copies of the questionnaire were personally administered on the respondents by the researcher, and collected on the spot.

Face validity of the instrument was determined by three lecturers in the department of Technical and Business Education, Delta State University, Abraka, Nigeria. The reliability was ascertained by test-retest method designed by Tuckman (1988). The instrument was found to have a reliability coefficient of 0.78. The data collected were analysed using weighted mean and standard deviation (SD).
The instrument was constructed using the four-point Likert-type response rating scale namely; Strongly Agree (SA); Agree (A); Disagree (D); and Strongly Disagree (SD) with a corresponding weights of 4, 3, 2, and 1 respectively. The cut-off point was fixed at 3.0. Therefore any item that will receive a mean score rating of 3.0 and above was regarded as agreed; while any mean below 3.0 was regarded as disagreed for improving the teaching and learning woodworking trades.

**Results**

The results of the study are summarized in the tables and sub-headings below.

**Research Question 1**

1. How adequate are qualified teachers for the teaching and learning of woodworking trades in Sapele Technical College?

**Table 1:** Mean ratings and standard Deviation of Qualified teachers for the teaching and learning woodworking trades.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Statement</th>
<th>Score</th>
<th>Mean</th>
<th>SD</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>There are enough qualified teachers to teach carpentry and Joinery</td>
<td>338</td>
<td>2.01</td>
<td>9.16</td>
<td>Disagree</td>
</tr>
<tr>
<td>2.</td>
<td>There are rough qualified teachers to teach furniture making</td>
<td>394</td>
<td>2.34</td>
<td>9.69</td>
<td>Disagree</td>
</tr>
<tr>
<td>3.</td>
<td>There are qualified teachers to teach machine woodworking</td>
<td>329</td>
<td>1.95</td>
<td>10.21</td>
<td>Disagree</td>
</tr>
<tr>
<td>4.</td>
<td>There are enough qualified teachers to teach technical drawing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1 shows the responses of the respondents on the adequacy of qualified teacher for the teaching and learning of woodworking trades at Sapele Technical College. The respondents agreed on four items as adequate out of the nine items, while five items are adjudged inadequate for improving teaching and learning.

Research Questions 2

How adequate are woodworking machinery for the teaching and learning woodworking trades in technical colleges?

Table 2: Mean ratings and standard deviation of respondents on adequacy of woodworking machinery for the teaching and learning woodworking trades.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Statement</th>
<th>Score</th>
<th>Mean</th>
<th>SD</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Portable circular saw is adequate</td>
<td>412</td>
<td>2.45</td>
<td>8.92</td>
<td>Disagree</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>Frequency</td>
<td>Mean</td>
<td>Median</td>
<td>Rating</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------</td>
<td>-----------</td>
<td>------</td>
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<td>----------</td>
</tr>
<tr>
<td>11.</td>
<td>Sawber saw is adequate</td>
<td>400</td>
<td>2.38</td>
<td>9.02</td>
<td>Disagree</td>
</tr>
<tr>
<td>12.</td>
<td>Portable electric drill is adequate</td>
<td>436</td>
<td>2.59</td>
<td>9.03</td>
<td>Disagree</td>
</tr>
<tr>
<td>13.</td>
<td>Power plane is adequate</td>
<td>411</td>
<td>2.44</td>
<td>8.92</td>
<td>Disagree</td>
</tr>
<tr>
<td>14.</td>
<td>Portable router is adequate</td>
<td>392</td>
<td>2.33</td>
<td>9.13</td>
<td>Disagree</td>
</tr>
<tr>
<td>15.</td>
<td>Portable sander is adequate</td>
<td>360</td>
<td>2.14</td>
<td>9.48</td>
<td>Disagree</td>
</tr>
<tr>
<td>16.</td>
<td>Radial saw is adequate</td>
<td>377</td>
<td>2.24</td>
<td>9.43</td>
<td>Disagree</td>
</tr>
<tr>
<td>17.</td>
<td>Table saw is adequate</td>
<td>522</td>
<td>3.10</td>
<td>9.41</td>
<td>Agree</td>
</tr>
<tr>
<td>18.</td>
<td>Jointer is adequate</td>
<td>319</td>
<td>1.89</td>
<td>12.21</td>
<td>Disagree</td>
</tr>
<tr>
<td>19.</td>
<td>Band saw is adequate</td>
<td>563</td>
<td>3.35</td>
<td>10.59</td>
<td>Agree</td>
</tr>
<tr>
<td>20.</td>
<td>Surface is adequate</td>
<td>391</td>
<td>2.32</td>
<td>9.13</td>
<td>Disagree</td>
</tr>
<tr>
<td>21.</td>
<td>Lathe machine is adequate</td>
<td>583</td>
<td>3.47</td>
<td>11.71</td>
<td>Agree</td>
</tr>
</tbody>
</table>

Cut-off point = 3.0  
N = 168

Table 2 shows the data analysis regarding the ratings of respondents concerning the adequacy of machinery for the teaching and learning woodworking trades in technical college. The respondents agreed on three items as adequate out of twelve items, while nine items are adjudged as inadequate for improving teaching and learning woodworking trades.

**Summary of Findings**

Qualified teachers to teach safety and technical drawing, NCE and B.Sc. (ed) holders are adequate. Other instructional resources such as teachers to teach carpentry and joinery, furniture craft, machine woodworking and holders of B.Tech. (ed) teachers were inadequate for teaching and learning the woodworking trades. Teachers who are ICT literature were found to be inadequate for
improving teaching and learning of woodworking trades in the technical college.

Discussion

Findings of this study revealed that teachers to teach the skills are inadequate and that machines for carrying out practical activities are also inadequate. This finding collaborates earlier findings by Oranu (1990), Okoro (1991) who observed that facilities, which include the buildings, equipment, tools and machinery, etc available, are inadequate for effective use in technical colleges. Oranu and Okoro posit that one of the problems in our educational system in Nigeria is lack of physical and material resources. Okoro (1991) made it known that ineffective teaching may be caused by lack of suitable tools, equipment, facilities and materials. These have to be supplied if remarkable improvement in the performance of students is to be made. Such a student that is not well trained with those equipment and facilities when employed by the industry will be retrained at considerable cost before he can be effective and efficient. While the need to maintain a balance between theory and acquisition of skills is appreciated, it is important that more emphasis should be placed on the promotion of student’s performance in practical work.

Conclusion

School workshop, laboratories and the environment where vocational and technical education is given must be adequately equipped to reflect the actual working environment. It is recognized globally that technical college workshop, etc should be well equipped with instructional facilities. In short the school workshops should look like the workshop where the students will work after the training. It is only through this way that the students’ effectiveness and efficiency in the world of work can be ensured after training.

Recommendations

1. ICT facilities should be made available in all technical colleges in Nigeria for improving teaching and learning of woodworking trade.

2. Teachers in technical colleges should be computer (ICT) literate.

3. Companies, government and other organizations should take the responsibility of the provision, production and contribution of simple machinery to improve the poor state of instruction in technical colleges in Nigeria.

References


