Constraints to Students’ Effectiveness in Practical Skills Acquisition in Technical Colleges in Kogi State, Nigeria

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ABSTRACT
The study investigated some constraints to students’ effectiveness in practical skill acquisition in technical colleges in Kogi State. Descriptive survey design was adopted in the study. The population of the study comprised 286 final year students and 47 technical teachers from the five Government Technical Colleges in Kogi State. A sample size of 245 (198 students and 47 teachers) was used for the study. Simple random sampling technique was employed in the selection of the students. But for the teachers all the 47 of the VOC III teachers were used. Two research questions were answered and two hypotheses tested at 0.05 level of significance. The instrument used for the study was a structured questionnaire validated by three experts and reliability tested through the use of Pearson Product Moment Correlation to obtain a reliability coefficient of 0.92. Mean was used to answer the research questions while the hypotheses were tested with Z-test. The study revealed that some of the problems constraining acquisition of practical skills by students of technical colleges in Kogi State included difficulties in Student Industrial Work Experience Scheme (SIWES) participation and inadequate workshop facilities. Based on the findings, it was recommended among others that an institution be established by the government through the Ministry of Education solely for the affairs of SIWES in which students enroll, participate and certified as a “must” requirement before graduation from technical colleges. Also, yearly accreditation of the colleges by the relevant agencies, to ascertain the adequacy of the workshop facilities.

Keywords: Constraints, Effectiveness, Practical Skills, Technical College, Workshop, Facilities.

INTRODUCTION
In a developing country like Nigeria, the importance and relevance of technical and vocational educational and training (TVET) cannot be over emphasized. This is because according to Imogie (2014), no nation can develop to its fullest and keep pace with trends in science and technology without effective and efficient technical and vocational educational and training (TVET) system. TVET equips people with a broad range of knowledge, skills and attitudes that are now recognized as indispensable for meaningful participation in work and life (Okwelle, 2013). TVET involves the acquisition of skills and competencies that can help individuals to function productively in industrial and commercial occupations (Wapmuk, 2011). The National Policy on Education (NPE) clearly states that, “technical and vocational education is used as a comprehensive term referring to those aspect of the educational process involving in addition to general education, the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life” (FGN, 2004:30).

The main thrust of TVET is to develop skills in learner –skills that are practical in nature. Okoye and Okwelle (2013) posited that TVET is a system of education that prepares, develops and practically orientates the individual for the purpose of transforming ideas into reality. Idoko (2014) explained that acquisition of practical skills involves the development of new skills, practice and way of doing things or performing a task, usually gained through training or experience. From the foregoing, practical skills acquisition could be referred to as an...
organized process of training which eventually leads to effectiveness in a given trade. It is an ability to do a given job better and faster with enhanced output.

In Nigerian educational system, technical colleges offer technical and vocational education programmes for the purpose of producing middle level skilled manpower required for the nation’s economic and technological development (Federal Republic of Nigeria [FRN], 2013). In the words of Avan (2007), a technical college is the “factory” for the production of needed technologists, technicians, and craftsmen as well as skilled artisans who are required to turn the nation’s economy positively. However in the contemporary Nigeria, quality of technical college graduates has been a major source of concern by most employers who express their dissatisfaction on the level of technical skills possessed by these technical college graduates (Muhammad & Rufai, 2013). In the same vein, David and Nnoli (2013) pointed out that there are evidences of the inability of the technical colleges to meet the set standard of the quality of education for some years now; leading to the situation where technical college graduates now parade the streets with paper qualifications and lack the needed saleable skills for gainful employment. The need to take a holistic approach on the country’s technical colleges cannot be gainsaid.

Statement of the Problem

The increasing dearth of competent skilled artisans in different fields of technology is becoming worrisome issue today. As reported in Vanguard Newspapers by the then minister of education that, “the country is now at the point of importing foreign labour from all over the world due to lack of competent Nigerians with adequate skills to cater for the demands of the economy and the labour market, such as good artisans” (Vanguard Newspapers, 2009). The shabby performance of technical education graduates in Nigeria is no longer news as very important projects in the country, particularly, the construction industries are now run by technicians and craftsmen from neighbouring West African countries (Nwolu-Elechi, 2013). Lack of these skills is frustrating to the industrial sector and its effects are equally grave on the society in all spheres of the economy. A number of researchers have attributed lack of these practical skills to some issues of constraints in the technical colleges. In this context, Oluwatumbi (2015) asserted that it is appalling that many students graduate yearly from technical colleges without acquiring relevant practical skills due to some constraints in the technical colleges. This could also be the case with technical colleges’ graduates from Kogi state of Nigeria. It is against this background that the researchers sought to investigate the constraints to students’ effectiveness in the acquisition of practical skills in technical colleges in Kogi State.

Purpose of the Study

The main purpose of this study is to investigate the constraints to students’ effectiveness in the acquisition of practical skills in technical colleges in Kogi State. Specifically, the study is to:

1. Determine Students Industrial Work Experience Scheme (SIWES) factors constituting constraints to students’ effectiveness in practical skills acquisition in technical colleges in Kogi State.
2. Determine workshop facilities factors constituting constraints to students’ effectiveness in practical skills acquisition in technical colleges in Kogi State.

Research Questions

The following research questions were formulated to guide the study:

1. What SIWES factors constitute constraints to students’ effectiveness in practical skills acquisition in technical colleges in Kogi State?
2. What workshop facilities factors constitute constraints to students’ effectiveness in practical skills acquisition in technical colleges in Kogi State?

Hypotheses

The following null hypotheses were postulated and tested at the 0.05 level of significance:

1. There is no significant difference in the mean responses of students and teachers on SIWES factors constituting constraints to students’ effectiveness in the acquisition of practical skills in technical colleges in Kogi State.
2. There is no significant difference in the mean responses of students and teachers regarding workshop facilities factors constituting constraints to students’ effectiveness in the acquisition of practical skills in technical colleges in Kogi State.
REVIEW OF LITERATURE

Technical and vocational education and training (TVET) is meant to produce different levels of skilled manpower required in the industry for technological advancement of any nation (Chukwuedo & Omofonmwan, 2015). Similarly, Olayinka & Oyenuga (2010) asserted that the graduates of technical and vocational colleges are expected to carry out services, diagnoses, tests and repairs as highlighted in the national curriculum of technical colleges that is in use all over the federation. Based on the foregoing it is expected that to realize the objectives of TVET at the technical college level, the students should be fully exposed to practical training in their fields of endeavours. This could be achieved through effective SIWES and equipped workshop facilities for students training among other factors. In this research, Students’ Industrial Work Experience Scheme (SIWES) and Workshop facilities factors as they affect practical skill training of technical college students were investigated.

Students’ Industrial Work Experience Scheme (SIWES) Factors

The Students’ Industrial Work Experience Scheme (SIWES) is a practical skill acquisition training programme designed to expose and prepare students of technical colleges and other related schools from college environment to work environment. It is an effort to bridge the gap existing between theory and practice. The Students’ Industrial Work Experience Scheme (SIWES) which was established in 1973 in Nigeria is a planned and supervised training intervention based on a stated and specific learning and career objectives geared towards developing the occupational competencies of the participants (students). According to Akerejola (2008), SIWES is a field service department of Industrial Training Fund (ITF). The scheme is a tripartite programme involving the students, the institutions and the industries (employers of labour). Tambuwal (2012) stated that SIWES is aimed at exposing students to machines and equipment, professional work methods and ways of safeguarding the work areas and workers in industries and other organizations. It enables the participants to develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. (Ugwuanyi & Ezema, 2010). Specifically, the objectives of SIWES are to:

a) Prepare students for work situation they are likely to meet after graduation.

b) Provide an avenue for students in the schools to acquire industrial skills and experience in their course of study.

c) Make the transition from the school to the world of work easier, and thus enhance students’ contacts for later job placement.

d) Enlist and strengthen employers’ involvement in the entire educational process of preparing graduates for employment in industry.

e) Provide students with an opportunity to apply their theoretical knowledge in real work situation, thereby bridging the gap between classroom work and actual practice.

f) Expose students to work methods and techniques in handling equipment and machinery that may not be available in the schools. (Ugwuanyi & Ezema, 2010).

Students’ Industrial Work Experience Scheme (SIWES) is a laudable skills acquisition programme which is geared towards technological development of the nation. According to Oyeniyi (2012) it is a human capital formation programme through industrial attachment for which students are expected to have a practical experience on the basis of theories and principles acquired in the teaching and learning process. Oyeniyi went further to say that SIWES is a skills training programme which affords students the opportunity of familiarizing, acquiring and exposing themselves with the needed experience in handling industrial equipment and machinery that are not usually available in their institutions.

However, as highlighted by Oyeniyi (2012), that the scheme cannot be said to have achieved the desired objectives due to many factors ranging from the structural causes of performance problem that have plagued the system to increasing number of students and institutions which place undue pressure on the few surviving industrial organizations. Tambuwal (2012) posited that SIWES is faced with many constraints which includes; problems of misconception, scarcity of place of attachment, school or institution problems, irregular supervision of the relevant agencies, resource or funding problems and ineffective organization. Likewise, Egbri and Chukwuedo (2013) pointed out that the existing SIWES in Nigeria is not satisfactory as far as TVET is concerned.
vis-à-vis practical skill acquisition; hence the need to re-engineer TVET through functional school-industry collaboration for capacity building of prospective TVET graduates.

**Workshop Facilities Factors**

According to Ogbuanya & Okoli, (2014), acquisition of practical skills can only be possible in a well functional workshop -stocked with relevant equipment and facilities. Such function may include; electrical/electronics, construction, repairs, metal working, wood working, painting etc. School workshops, particularly technical college workshops, offer opportunities for practical training of students in skill acquisition in their technical and vocational trade areas for future development of the key sector of the economy in order to meet the basic needs of the nation.

TVET is a skills base type of education (Okoye & Okwelle, 2013). These skills can be better acquired in a well-established and functional workshop with the right tools, equipment and machines for effective implementation of the programmes (Amimani & Ogunyika, 2011). The TVET curriculum can only be implemented where workshop facilities, tools, equipment and machines are adequate and relevant. For it is through effective utilization of training facilities, the graduates decline in quality of skill training can be improved. According to Eze (2015), training facilities ultimately enhance instructional curriculum objectives attainment. However, one of the issues of great controversy in technical colleges today is the issue of the poor state of workshop facilities. Puyate (2008) maintained that the present state of technical and vocational education facilities in most technical college workshops is very poor; with no planned means of maintenance of the already broken down equipment. According to Odu (2011), the tools in the school workshops are at variance with the tools in the industries where the technical and vocational graduates will work. In the same vein, Ayonmike (2014); Okoye and Okwelle (2013) posited that tools and machines are short in supply, obsolete and non-functional and thus cannot meet the facility requirements of technical and vocational education programmes.

**MATERIALS AND METHODS**

The research design adopted in the study is descriptive survey. The study was carried out in all the five government technical colleges in Kogi State located at Ankpa, Dekina, Idah, Mopa and Oboroke communities. The population for the study comprised 286 final year (Vocational III) students and 47 teachers teaching the VOC III students from the five (5) Government Technical Colleges in the State. A sample of 198 students representing 69.2% of the population of the students was taken for the study. All the 47 teachers of VOC III students were included in the study without sampling because they were few and manageable. In all, sample size of 245 (students and teachers) respondents was used for the study.

A structured instrument titled “Constraints to Students’ Effectiveness in Practical Skill Acquisition Questionnaire” (CSEPSAQ) developed by the researchers was used to gather data for the study. The CSEPSAQ was divided into three (3) sections, namely, A, B, & C respectively. Section A, elicit information on the personal characteristics of the respondents. Section B, elicits information on the Students’ Industrial Work Experience Scheme (SIWES) factors and Section C elicits information on workshop facilities factors in the technical colleges. The questionnaire was structured based on a 4-point rating scale of Strongly Agree (SA = 4), Agree (A = 3), Disagree (D = 2), and Strongly Disagree (SD = 1). The instrument was face validated by three experts in TVET. The reliability of the instrument was determined using a test re-test method and using Pearson Product Moment Correlation (PPMC) a correlation coefficient of 0.92 was obtained. The research questions were analyzed with mean and standard deviation while the null hypotheses were tested with z-test statistical technique at the 0.05 level of significance. The acceptance or rejection limit of the mean responses were determined thus: Mean responses up to and above 2.50 were accepted and mean responses of 2.49 and below were rejected as constraints to students’ effectiveness in practical skill acquisition in technical colleges in Kogi State.

4
RESULTS
The analysis of data in relation to each of the research questions and hypotheses are presented in Tables 1 - 4.

**Research Question 1:** What SIWES factors constitute constraints to students’ effectiveness in practical skills acquisition in technical colleges in Kogi State?

<table>
<thead>
<tr>
<th>S/N</th>
<th>ITEMS</th>
<th>STUDENTS</th>
<th>TEACHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Many students never participate in SIWES</td>
<td>2.85</td>
<td>1.19</td>
</tr>
<tr>
<td>2</td>
<td>Many students participated in unrelated firms.</td>
<td>2.93</td>
<td>1.10</td>
</tr>
<tr>
<td>3</td>
<td>Not many industries are available for SIWES</td>
<td>3.13</td>
<td>0.89</td>
</tr>
<tr>
<td>4</td>
<td>Industries and organizations are not ready to accept students on SIWES programme.</td>
<td>2.95</td>
<td>0.95</td>
</tr>
<tr>
<td>5</td>
<td>No regular supervision of students on SIWES by teachers.</td>
<td>2.93</td>
<td>1.09</td>
</tr>
<tr>
<td>6</td>
<td>Students stipends are not paid regularly.</td>
<td>3.11</td>
<td>0.89</td>
</tr>
<tr>
<td>7</td>
<td>Students have no interest in SIWES programme.</td>
<td>2.41</td>
<td>1.17</td>
</tr>
<tr>
<td>8</td>
<td>Students on SIWES are not supervised by ITF officials.</td>
<td>2.74</td>
<td>1.04</td>
</tr>
<tr>
<td>9</td>
<td>No synergy between the schools and industries.</td>
<td>2.86</td>
<td>1.08</td>
</tr>
<tr>
<td>10</td>
<td>The scheme can be said to have achieved the desired objectives.</td>
<td>1.90</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td><strong>Grand Mean</strong></td>
<td><strong>2.78</strong></td>
<td><strong>2.83</strong></td>
</tr>
</tbody>
</table>

Source: Field Survey, 2017
Key: A = Agree, D = Disagree

As indicated in Table 1, the respondents agreed to all the statements except item 10 as constraints to practical skill acquisition with mean responses greater than 2.50. The grand mean of 2.78 and 2.83 for both students and teachers is indicative of general agreement that there are SIWES related constraints to practical skill acquisition by students in technical colleges in Kogi State.
Research Question 2: What workshop facilities factors constitute constraints to students’ effectiveness in practical skills acquisition in technical colleges in Kogi State?

Table 2: Mean Responses of students and teachers on workshop facilities factors constituting constraint to students.

<table>
<thead>
<tr>
<th>S/N</th>
<th>ITEMS</th>
<th>STUDENTS</th>
<th></th>
<th>TEACHERS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>( \bar{X} )</td>
<td>SD</td>
<td>( \bar{X} )</td>
<td>SD</td>
</tr>
<tr>
<td>11</td>
<td>Most machines and equipment are obsolete</td>
<td>2.97</td>
<td>1.06</td>
<td>A</td>
<td>2.98</td>
</tr>
<tr>
<td>12</td>
<td>Inadequate workshop space</td>
<td>2.39</td>
<td>1.04</td>
<td>D</td>
<td>2.39</td>
</tr>
<tr>
<td>13</td>
<td>Unsteady power supply</td>
<td>2.99</td>
<td>1.01</td>
<td>A</td>
<td>3.02</td>
</tr>
<tr>
<td>14</td>
<td>No modern laboratory</td>
<td>3.02</td>
<td>1.03</td>
<td>A</td>
<td>3.00</td>
</tr>
<tr>
<td>15</td>
<td>Teaching aids/materials are short in supply.</td>
<td>2.86</td>
<td>1.08</td>
<td>A</td>
<td>2.93</td>
</tr>
<tr>
<td>16</td>
<td>Tools in the workshop are non functional</td>
<td>2.93</td>
<td>0.98</td>
<td>A</td>
<td>2.93</td>
</tr>
<tr>
<td>17</td>
<td>No planned maintenance schedule</td>
<td>2.73</td>
<td>1.06</td>
<td>A</td>
<td>2.72</td>
</tr>
<tr>
<td>18</td>
<td>Tools and machines are not variance with the ones in the industries.</td>
<td>3.06</td>
<td>0.94</td>
<td>A</td>
<td>3.09</td>
</tr>
<tr>
<td>19</td>
<td>Experiments are difficult to run due to lack of materials and equipment.</td>
<td>2.91</td>
<td>0.94</td>
<td>A</td>
<td>2.89</td>
</tr>
<tr>
<td>20</td>
<td>Inadequate personal protective equipment (PPE) in the workshop.</td>
<td>2.26</td>
<td>1.06</td>
<td>D</td>
<td>2.24</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2017

The data shown on Table 2 indicated that the respondents agreed to item statements 11, 13, 14, 15, 16, 17, 18 and 19 as constraints to acquisition of practical skills by students in technical colleges in Kogi State. The respondents disagreed with items 12 and 20. However, the grand mean values 2.81 and 2.82 for students and teachers respectively, indicated that SIWES was a constraint to acquisition of practical skills in the technical colleges.

Hypothesis 1: There is no significant difference in the mean responses of students and teachers about SIWES factors constituting constraints to students’ effectiveness in the acquisition of practical skills in technical colleges in Kogi State.

Table 3: Z-test on SIWES Factors

<table>
<thead>
<tr>
<th>Groups</th>
<th>( \bar{X} )</th>
<th>SD</th>
<th>N</th>
<th>df</th>
<th>Zcal</th>
<th>Z Crit.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>2.78</td>
<td>0.99</td>
<td>198</td>
<td>242</td>
<td>0.06</td>
<td>1.96</td>
<td>Accept</td>
</tr>
<tr>
<td>Teachers</td>
<td>2.83</td>
<td>1.00</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis test of significant difference on table 3 yielded Zcal. value of 0.06 against Zcrit. value of 1.96. Since the Zcal was less than the Zcrit the hypothesis was accepted. This implies that students’ mean response did not significantly differ from that of teachers regarding SIWES factors affecting acquisition of practical skills in technical colleges.

Hypothesis 2: There is no significant difference in the mean responses of students and teachers about workshop facilities factors constituting constraints to students’ effectiveness in the acquisition of practical skills in technical colleges in Kogi State.
Table 4: Z-test on Workshop Facilities Factors

<table>
<thead>
<tr>
<th>Groups</th>
<th>$\bar{X}$</th>
<th>SD</th>
<th>N</th>
<th>df</th>
<th>Zcal</th>
<th>ZCrit.</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>2.81</td>
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<td>0.03</td>
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<tr>
<td>Teachers</td>
<td>2.82</td>
<td>0.99</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis test of significant difference yielded $Z_{cal}$ value of 0.03 against $Z_{crit.}$ value of 1.96. Since the $Z_{cal.}$ was less than the $Z_{crit.}$ the hypothesis was accepted. This implies that students’ mean response did not significantly differ from teachers’ mean response regarding workshop facilities related constraints affecting acquisition of practical skills by students of technical colleges in Kogi State.

DISCUSSION

The results from the analysis of the first research question revealed that many students never participated in SIWES programme as the curriculum demands for technical college students, and that the few that participated did so in unrelated organizations. The results also indicated that unavailability of relevant industrial organizations and their unpreparedness to accept students on SIWES, characterized SIWES programme others include; lack of synergy between the colleges and the industries, lack of supervision of students and none payment of stipends to students on SIWES as, and when due are serious constraints to acquisition of practical skills in technical colleges in Kogi State. The result is in agreement with Aminu (2012) who stated that the problems usually encountered by students on SIWES includes among others, scarcity of place of attachment, irregular supervision of the relevant agencies and inadequate funding. The implication of the result shows that majority of students from technical colleges in Kogi State do not properly participate in SIWES programme and hence their ineffectiveness in practical skill acquisition. The hypothesis test of significant difference in the mean responses of students and teachers regarding SIWES factors in Kogi State shows no difference in opinion among the two categories of respondents.

The results concerning the second research question showed that obsolete machines and equipment, lack of modern laboratories, teaching aids/materials, tools, lack of maintenance culture and unsteady power supply are the major constraints to acquisition of practical skills by students in technical colleges in Kogi State. This is in agreement with Umar, I. Y. & Ma'aji, A. S., (2010) research work whose result revealed inadequacy of workshop facilities. The hypothesis test of significant difference in the mean responses of students and teachers regarding workshop facilities factors constituting constraints to students’ effectiveness in practical skill acquisition in technical colleges in Kogi State shows no difference in opinion among the two categories of respondents. Generally, the result affirms that workshop facilities are grossly inadequate in technical colleges in Kogi State.

CONCLUSION

The study sought to investigate the constraints to students’ effectiveness in practical skill acquisition in technical colleges in Kogi State. From the data analysis and findings, it can be conclusively said that Students Industrial Work Experience Scheme (SIWES) programme has been relegated to the background in technical colleges in Kogi State. Consequently, this has contributed immensely to students’ ineffectiveness in practical skill acquisition on graduation from the colleges in the State. In the study also, deficiency in practical skills of technical colleges graduates in Kogi has been attributed to inadequate workshop facilities.

RECOMMENDATIONS

From the study, the following recommendations are made herewith:

1. Based on the result that SIWES constitute constraints to students’ effectiveness in practical skill acquisition, it is recommended that an institution be established solely for SIWES in which students enroll, participate and certified as a “must” requirement before graduation from technical colleges.
2. Based on the finding the government through the relevant body such as NBTE should liaise with foreign educational organization for accreditation of technical colleges. This is to ensure neutrality in the accreditation exercise with respect to workshop facilities.

3. The synergy and collaboration of industrial organizations with technical colleges should be strengthened.

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