Metalwork Practice Skills Needed By Technical College Graduates for Sustainable Employment in Edo and Enugu States of Nigeria

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Abstract
This study was conducted with the objective of identifying metalwork skills needed by technical college graduates for sustainable employment in Edo and Enugu States of Nigeria. Three structured research questions were used to guide the study. The research questions were answered using means with standard deviation. A survey research design was used for the study. The population of the consisted of 80 graduates of metalwork from technical college working in industries in Edo and Enugu States. A 76 questionnaire items was the instrument used for data collection. The instrument was validated using two experts from Department of Vocational and Technology Education, Niger Delta University, Amassoma Bayelsa State. The reliability of the instrument was determined using Spearman's Rank Order correlation which yielded a coefficient of reliability of 0.91. The findings showed that technical college graduates needed skills to identify symbols, to use measuring instrument, read blue print and among others. Recommendations were made which included that metalwork machines equipment, laboratory/workshop and qualified instructors should be made available in technical colleges for sustainable employment in Edo and Enugu States of Nigeria.

Keyword: *Metalwork, skill, Technical Education, Sustainable Employment.*

Introduction

The current alarming rate of unemployment among the graduates of technical schools is not unnoticed. This seems as a defect in academic curriculum that prepares recipients with little or no jobs related skill contents. The state of unemployment has forced Nigerian government to stress self-reliance and self-employment as alternative to government to paid-employment. Graduates of technical colleges who are supposed to be employers to labours are now job seekers. Whereas the graduates complain of high level of unemployment, employers on the other hand complain that the graduates are poorly prepared and therefore unemployable. This statement is in consonant with the view of Uzoagulu (2010) that the bane of the Nigeria economy was lack of the needed skills and those who were certified to possess these skills were half-baked or ill-prepared. This is seen as defect in Nigeria educational system because of its theoretical inclination.

In many cases, many employees compensate for insufficient academic preparation by organizing trainings and remedial courses for new employees. These steps ultimately increase the company's operating cost and reduce their profitability margin and market comparative ability. Companies that cannot afford to take the risk of training new employee simply source for available and suitable candidates from home and abroad. Since the quality of any educational programme is measured by the extents to which the recipients have acquired skills, knowledge and abilities. Anele (2002) opined that, occupational programmes should foster inculcation of skills to the students for self-reliance. The National Policy on Education (2013) defined technology as those aspect of human activities that make use of practical and applied skills as well as basic scientific know how to design, produce and be able to interpret scientific ideas for the convenience of men. It stresses that technology relates to the technological capabilities (skills) of individual as well as the expertise required for transforming inputs to outputs. This transforming of scientific knowledge into a system of production should embraces the technical, engineering, managerial, administration, marketing and other consumptive aspect of the whole economy.

Uwaifo (2009) opined that technical education is the training of technically oriented personnel who are to be the initiators, facilitators and implementers of technological development of a nation. He emphases that this training of it citizenry on the need to be technologically liberate, will lead to self-reliance and sustainability. He stressed that technical education more than any other profession has direct impact on national welfare. However, technical education contributions are widespread and visible, ranging from metal work technology, mechanical/automobile technology, electrical and electronics technology, building and woodwork technology. Consequently, technical education can serves as change agents not only for technical systems but also for many other-societal changes. The practical nature of technical education makes it unique in content and approach, thereby requiring special case and attention. The inputs of technical education are visible to the extent that even an illiterate could see when failures occur.

Metalwork Practice is one of the courses in technical colleges which is aimed at training skilled labour for self-reliance. Metalwork technology is a field of study that teaches individual how to make use of metal to produce different product for daily needs. Golden (2009), notes that skills encompass everything that students need to succeed in the competitive and increasing complex world. This implies for the need for effectiveness in the metalwork practices. Any enterprise and occupation require that individual acquires the necessary skills as well-established habit of doing something and it involves the acquisition of practice and attitude to be able to do something well. In metalwork practices: casting, joining, forming, forging, heat treatment, cutting, sanding and pattern development require skills to exhibit the knowledge to select production stages effectively.

Skills acquisition is one of the surest ways through which young people can find their ways into the labour market either in the public or private sectors. Osuala (2004), defined skill as the ability to perform expertly, facilitate performance during employment. Michael (2004), notes that skill is an individual capability to control element of behavior, thinking and feeling within specified content and within particular task domain. Advance in technology have rendered metalwork skills inadequate for work in metal process industry; while creating needs for new and often sophisticated skills. This is because metal products are coming with new devices as a result of technological advancements. With the seemingly rapid growth in metal users in Nigeria today, there is need to improve skills of the workforce needed for metal industry. Amusa (2009), opines to become a skill metalworker extensive on-the-job experience

is required to understand the symbols, metal properties, and electricity. In this era of computer, robotic and computer aided manufacturing these require more than a basic understanding of the metalwork process. Amusa (2009), further opined that courses in drafting, blueprint, reading, mathematics, computer science and physics are also required and valuable. This will make them employable either personally or institutionally.

Sustainable employability skills are referred to as those skills that enable an individual to acquire and keep a job (Akpan 2003). There are numerous lists that focused on the topics of personal image, attitude, habits and behavior, techniques of communication, problem-solving, decision making; management and organizational processes. Sustainable employability skills are important on the job and must be taught in the schools.

From the forgoing, it is necessary to note that skills are very important to life. For any nation to survive, the provider of goods and services must be skilled at a rate that should improve the living standard of the people. The need arises to sustain the pace of development in metal industry in Nigeria and the metal work programme need to inculcate in the graduates the skills needed to sustain the economic reality for sustainable employment in Edo State of Nigeria.

Purpose of the Study

The purpose of the study was to determine the metalwork skills needed by technical college graduates for sustainable employment in Edo and Enugu States. Specifically, the study determined;

1. Practical skills needed by the technical college graduates for sustainable employment in Edo and Enugu States.
2. Practical skills technical college graduates are deficient for sustainable employment in Edo and Enugu States.
3. Factors that militate against the acquisition of metalwork skills needed by technical college graduates for sustainable employment in Edo and Enugu States.

Research Questions

The following questions guided the study:

1. What are the Practical skills needed by technical college graduates for employment in Edo and Enugu states?
2. What are the Practical skills technical college graduates are deficient for sustainable employment in Edo and Enugu State?
3. What are the factors that militate against the acquisition of Metalwork skills needed by technical college graduates for sustainable employment in Edo and Enugu States

Methodology

Research Design

Survey research design was employed in this study. According to Alio (2008), a survey research design is one in which a group of people or items are studied by collecting and analyzing data from only a representative of the entire population.

Population of the Study

The population for the study consisted of 80 metalwork technical college graduates working as civil servants in Edo and Enugu States.

Sample and Sampling Techniques

The entire population was used because of the relative small size of the population. Hence, 80 metalwork technical college graduates constitute the sample size.

Instrumentation

The instrument for data collection was a structured questionnaire. The questionnaire consisted of 76 items structured in a four-point rating scale of Strongly Needed, Moderately Needed, Slightly Needed and Not Needed with weighted value of 4,3,2 and 1 point (s) respectively. All the 80 copies of questionnaire distributed were completed and returned.

Validity of the Instrument

Face validation of the questionnaire was done using two experts from Department of Vocational and Technology Education, Niger Delta University, Amassoma, Bayelsa State. They made suggestions that helped in modifying the final copies of the instrument used for the study.

Reliability of the Instrument

The test-retest method was used to establish the reliability of the instrument. The Spearman's Rank Order correlation was used and a correlation coefficient of 0.91 was obtained; thus, indicating that the instrument was reliable and suitable for the study.

Method of Data Analysis

Mean with standard deviation was used to answer the three research questions that guided the study. Results were presented in Tables. The decision rule was that items with mean value of 2.50 and above were regarded as needed while those with mean values below 2.50 were indicated as not needed.

Results:

Result of the data analyzed for the study were presented according to research questions and contained in tables 1-3

Research Question 1: What are the Practical skills needed by the technical college graduates for sustainable employment in Edo and Enugu States?

Table 1: Mean with standard deviation on Practical skills needed by technical college graduates for employment in Edo and Enugu States

S/N	Metalwork Skills Needed include	$\bar{x}$	SD	Remarks
1	Ability to Identify Symbols and their application	3.20	0.28	Needed
2	Skill in metal are joining	3.70	0.20	Needed
3	Ability to maintain workshop safety	3.50	0.36	Needed
4	Skill in Gas joining	3.30	0.35	Needed
5	Ability to Identify types of metal	3.40	0.38	Needed
6	Ability to know the properties of metals	3.20	0.36	Needed
7	Ability to use measuring instrument	3.60	0.33	Needed
8	Ability to use drills and drilling machine	3.80	0.24	Needed
9	Ability to operate lathe machine	3.65	0.34	Needed
10	Ability to cut and fill metal into sizes or dimensions	3.75	0.34	Needed
11	Ability to read blue print	3.54	0.28	Needed
12	Ability to understand basic electricity	3.47	0.27	Needed
13	Skill in computer operation	3.90	0.28	Needed

14	Ability to interpret working drawing assembling drawing and details drawing	3.60	0.27	Needed
15	Skill in computer operation	3.80	0.37	Needed
16	Ability to construct agro-allied equipment	3.52	0.34	Needed
17	Ability of understand behavior or metal	3.76	0.26	Needed
18	Ability to use jig and fixtures	3.32	0.29	Needed
19	Ability to control effect of expansion	3.43	0.30	Needed
20	Ability to construct burglary proof	3.65	0.24	Needed
21	Ability to carry out simple equipment maintenance	3.64	0.25	Needed
22	Ability to are cutting	3.34	0.38	Needed
23	Ability to identify material needed for work	3.65	0.27	Needed
24	Ability to arranging party in proper places before joining	3.50	0.36	Needed
25	Ability to provide template	3.60	0.36	Needed
26	Ability to keep periodic maintenance of equipment in good repair.	3.34	0.23	Needed
27	Ability to control distortion	3.99	0.30	Needed
28	Ability to perform soldering and brazing	3.40	0.31	Needed
29	Ability to use marking out tools	3.30	0.28	Needed
	Grand Mean and Standard Deviation	**3.55**	**0.31**	**Needed**

Key: N=Needed NN=Not Needed

Table 1: All 29 items were needed by the respondent skills needed by metalwork graduates for self-employment.

Research Question 2: what areas of Practical skills are technical colleges graduates deficient for sustainable employment in Edo and Enugu States?

Table 2: Mean with standard deviation on the areas where metalwork college graduates are deficient in skills needed for sustainable employment in Edo and Enugu States.

S/N	Metalwork (Deficient Include)	$\bar{x}$	SD	Remarks
1	Ability to Identify Symbols and their application	3.60	0.33	Agree
2	Skill in metal are joining	3.70	0.38	Agree
3	Ability to maintain workshop safety	3.03	0.34	Agree
4	Skill in Gas joining	3.40	0.30	Agree
5	Ability to Identify types of metal	3.20	0.32	Agree
6	Ability to know the properties of metals	3.50	0.34	Agree
7	Ability to use measuring instrument	3.70	0.27	Agree
8	Ability to use drills and drilling machine	3.70	0.29	Agree
9	Ability to operate lathe machine	3.90	0.26	Agree
10	Ability to cut and fill metal into sizes or dimensions	3.40	0.24	Agree
11	Ability to read blue print	3.70	0.30	Agree
12	Ability to understand basic electricity	3.70	0.30	Agree
13	Skill in computer operation	3.00	0.26	Agree
14	Ability to interpret working drawing assembling drawing and details drawing	3.00	0.26	Agree
15	Skill in computer operation	3.20	0.27	Agree
16	Ability to construct agro-allied equipment	3.80	0.35	Agree

17	Ability of understand behavior or metal	2.00	0.35	Disagree
18	Ability to use jig and fixtures	2.02	0.32	Disagree
19	Ability to control effect of expansion	2.00	0.33	Disagree
20	Ability to construct burglary proof	3.50	0.38	Agree
21	Ability to carry out simple equipment maintenance	3.60	0.35	Agree
22	Ability to are cutting	3.70	0.35	Agree
23	Ability to identify material needed for work	3.40	0.37	Agree
24	Ability to arranging party in proper places before joining	3.60	0.28	Agree
25	Ability to provide template	3.40	0.24	Agree
26	Ability to keep periodic maintenance of equipment in good repair.	2.04	0.24	Disagree
27	Ability to control distortion	2.03	0.26	Disagree
28	Ability to perform soldering and brazing	3.00	0.22	Agree
29	Ability to use marking out tools	3.20	0.30	Agree
	Grand Mean and Standard Deviation	**3.24**	**0.31**	**Agree**

Key: A=Agree, D=Disagree

In table 2: Twenty four (24) items out of 29 were agreed by the respondents where areas the graduates were deficient in items numbers 18, 19, 26 and 27 the skills for sustainable employment.

Research Question 3: What factors militate against the acquisition of skills needed by metalwork technical college graduates for sustainable employment in Edo and Enugu States?

Table 3: Mean with standard deviation on factors that militate against the acquisition of skills needed by metalwork technical college graduates for employment in Edo and Enugu States.

S/N	Factors Includes	$\bar{x}$	SD	Remarks
1	Not enough practical work provided	3.90	0.35	Agreed
2	Unqualified technical instructor	3.40	0.24	Agreed
3	Inadequate hand tools in the workshop	3.00	0.27	Agreed
4	Lack of spacious workshop	3.20	0.30	Agreed
5	Lack of machine tools	3.11	0.30	Agreed
6	lack of practical equipment	3.15	0.34	Agreed
7	Lack of conducive workshop environment	3.40	0.39	Agreed
8	Use of inappropriate teaching methods	3.30	0.28	Agreed
9	Lack of instructional teaching aid materials	3.80	0.26	Agreed
10	Low image of technical and vocational education	3.70	0.24	Agreed
11	Lack of electricity or power	3.90	0.24	Agreed
12	Lack of motivation for the instructor/students	3.50	0.27	Agreed
13	Poor funding by government	3.40	0.26	Agreed
14	Students show no interest in practical work	3.70	0.33	Agreed
15	Inability to up-date the school program	3.03	0.27	Disagreed
16	Inability to provide a variety of training programmes	2.06	0.28	Disagreed
17	Poor societal attitude to technical/vocational education	3.50	0.23	Agreed
18	Students provide materials for practical work	2.00	0.34	Disagree
	Grand Mean and Standard Deviation	**3.12**	**0.29**	**Agreed**

Note: A=Agree, D=Disagree

In table 3: Fifteen (15) items, out of 18 are agreed and items number 15, 16, and 18 are disagreed by the respondents as factors militating against Metalwork technical graduates for employment.

Discussion and Findings

The study showed that 76 skills were needed by Metalwork technical college graduates for employment. The result showed that Metalwork Practical skills contained in research question one were agreed by the respondents. The finding revealed that possession of practical skills was important for self-employment. This result agreed with findings of Akpan (2003), who found that technical colleges were designed to prepare individual to acquire practical skills, basic scientific knowledge, attitude required as craftsmen and technician at sub-professional levels. This meant that the acquisition of practical skills is important before attempting to go into self-employment. In line with the objectives of technical colleges which are to equip the students with technical skills, knowledge and attitude necessary to meet specific job requirement, the training given to the students is what would enable them acquire practical skills for employment graduation. This implied that the skill acquisition of metalwork student in technical colleges would be updated to reflect the current changes in today's world of work with regards to employment. There is a need to equip the student's with adequate practical skills to enhance sustainable-employment on graduation.

The findings also revealed that the graduates were deficient in 24 out of the skills answered by research question two shown. Therefore graduates needed more training to enable them acquire necessary skills needed for employment in the areas they were deficient. According to Golden (2009), skills encompass everything that graduates need to succeed in the competitive and increasingly complex world. There is the need for effectiveness in the skills acquired. On factors militating against the acquisition of metalwork technical skills for employment as answered by research question three the respondents agreed that they militated against the acquisition of skills by metalwork technical graduates from technical colleges in Edo and Enugu States. Among the factors are non-provision of enough machines, hand tools, and materials for practical. This agreed agreement with the findings of Olaitan (1998), that vocational technical subject must be taught with tools, meaningful and interesting to make it meaningful and interesting to the students. This implied equipment, material and other instructional materials evoked in the students mental image needed for comprehension of the skills for employment.

Conclusion

Metalwork skills needed for employment, areas of skill deficiency and factors working against the acquisition of skills for employment were discussed. Adequately planned and implemented metalwork skill acquisition programme in technical colleges would equip the students with needed skills for employment on graduation. This would reduce unemployment that prevailed among the metalwork graduates in that they would be employer of labor rather than job seekers.

Recommendations

Based on the findings of the study, it was recommended that:

1. The teaching of practical work should be intensified in technical colleges to enhance skill acquisition for self-reliance on graduation.
2. The necessary tools, machine, materials, equipment, conducive environment and other instructional materials should be provided to help students acquire the needed skills for employment on graduation.

3. Qualified metalwork instructors should be employed to enhance skills acquisitions to the students.

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