

METALWORK PRACTICE SKILLS NEEDED BY TECHNICAL COLLEGE STUDENTS FOR SELF-RELIANCE

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Abstract

This study was conducted with the objective of identifying metalwork skills needed by technical college students for self-reliance in Ondo State. 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 study consisted of 80 graduates of metalwork from technical college working in industries in Ondo State. A 76 items questionnaire was the instrument used for data collection. The instrument was validated using two experts from Ekiti State University, Ado Ekiti, Ekiti State and an expert from Department of Vocational and Technical Education (VTE), Adekunle Ajasin University Akungba, Ondo State. The reliability of the instrument was determined using Spearman's Rank Order correlation and yielded a coefficient of reliability of 0.91. The findings showed that technical college students needed skills to identify symbols, to use measuring instrument, read blue print and in gas joining and arc cutting etc. Some recommendations were made, included that metalwork machines/equipment, laboratory/workshop and qualified instructor should be made available in technical colleges.

Key word: Metalwork, Skill, Technical Education, Self-reliance

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 paid-employment. Graduates of technical colleges who are supposed to be employers of 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 certificated 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 or abroad.

Since the quality of any educational programme is measured by the extents to which the recipients have acquired skills, knowledge and abilities, Anaele (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 transformation of scientific knowledge into a system of production should embrace 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 emphasises that this training of it citizenry on the need to be technologically literate, 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 serve 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 so 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 increasingly complex world. This implies for the need for effectiveness in the metalwork practices. Any enterprise and occupation require that individual acquires the necessary skills. Okorie (2000), opined, that skills is a 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 skill 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 behaviour, 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. Harold and Larry (1984), said 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 processes. Larry and Harold (1984) 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. Employability skills are referred to as those skills that enable an individual to acquire and keep a job. There are numerous lists that focused on the topics of personal image, attitude, habits and behaviour, techniques of communication, problem-solving, decision making; management and organizational processes. Employability skills are important on the job and must be taught in the schools.

From the foregoing, 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. Improvement on the other hand is the process of making something better than before. Amusa (2009) defined improvement as the ability or condition for becoming better than before. Improvement in this paper is a process of helping students of Technical colleges to acquire skills in metalwork practice for greater efficiency. In teaching and learning metalwork practice as industrial programme, all the necessary equipment and materials, instructions and directions on the operation, use and maintenance, planning

and executions of policy should be well thought. The need arises to sustain the pace of development in metal industry in Nigeria and the metal work programme need to inculcate in the students the skills needed to sustain the economic reality for self-reliant.

The purpose of the study was to determine the metalwork skills needed by technical college students for self-reliance in Ondo State.

Research Questions

The following questions guided the study:

- (1.) What are the metalwork skills needed by technical college students for self-reliance in Ondo State?
- (2.) What are as of metalwork skills are technical students deficient for self-reliance in Ondo State?
- (3.) What factors militate against the acquisition of needed skills by metalwork students for self-reliance in Ondo State?

Method

Survey design method was employed in this study. According to Alio (2008), a survey research is one in which a group of people or items are studied by collecting and analyzing data from only a few people or items considered to be representative of the entire population. The population for the study consisted of 80 graduates of metalwork practice from technical colleges that are self-employed in Ondo State. The entire population was used because of the relative small size of the population. 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, needed, slightly needed and not needed with weighted value of 4, 3, 2, and 1 respectively. All the 80 copies

of questionnaire distributed were completed and returned. Face validation of the questionnaire was done using three experts from Department of Technical Education, College of Education Ikere, Ekiti State and an expert from Ekiti State University, Ado Ekiti, Ekiti State and Adekunle Ajasin University, Akungba, Ondo State. They made suggestions that helped in modifying the instrument used for the study. 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 use for this study.

Mean with standard deviation was used to answer the three research questions that guided the study. Results were presented in Tables 1 – 3. 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 is the metalwork skills needed by technical college students for self-reliance in Ondo State?

Table 1: Mean with standard deviation on metalwork skills needed by technical college students for self-reliance.

S/N	Metalwork Skills	\bar{X}	SD	Remarks
1.	Ability to Identify Symbols and their application.	3.20	0.28	Needed
2.	Skill in metal arc 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 using hand tools.	3.80	0.37	Needed
16.	Ability to construct agro-allied equipment.	3.52	0.34	Needed
17.	Ability to understand behavior of 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 arc 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	3.55	0.31	Needed

Key: N=Needed NN=Not Needed

Table 1: All 29 items were needed by the respondent skills needed by metal students for self –reliance.

Research Question 2: what areas of metalwork skill are technical students deficient for self-reliance in Ondo State?

Table 2: Mean with standard deviation on the areas where metalwork students are deficient in skills needed by technical college students for self-reliance in Ondo State.

S/N	Metalwork Skills	\bar{X}	SD	Remarks
1.	Ability to Identify Symbols and their application.	3.60	0.33	Agree
2.	Skill in metal arc 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.	3.80	0.33	Agree
12.	Ability to understand basic electricity.	3.70	0.30	Agree
13.	Skill in computer operation.	3.70	0.30	Agree
14.	Ability to interpret working drawing assembling drawing and details drawing.	3.00	0.26	Agree
15.	Skill in using hand tools.	3.20	0.27	Agree
16.	Ability to construct agro-allied equipment.	3.80	0.35	Agree
17.	Ability to understand behavior of 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 arc 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		3.24	0.31	Agree

Key: A = Agree D=Disagree

In table 2: Twenty four (24) items out 29 were agreed by the respondents whereas the students were deficient in item number 18,19, 26 and 27 the skill for self-reliance.

Research Question 3: What factors militate against the acquisition of skills needed by metalwork students for self-reliance in Ondo State?

Table 3: Mean with standard deviation on factors that affect the acquisition of skills needed by metalwork students for self-reliance in Ondo State.

S/N	Factors	\bar{X}	SD	Remarks
1.	No 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 practical equipment.	3.11	0.30	Agreed
6.	Lack of machine tools.	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 instructors/ 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 programmes.	2:03	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	Disagreed
	Grand Mean	3.12	0.29	Agreed

Note: A = Agreed D = Disagreed

In table 3: Fifteen (15) items, out of 18 are agreed and item number 15, 16, and 18 are disagreed by the respondents as factors militating against metalwork students in skills acquisition for self-reliance.

Discussion of Findings

The study showed that 76 skills were for self-reliance needed by metalwork technology students for self-reliance. The result showed that metalwork practice skills contained in research question one were agreed by the respondents. The finding revealed that possession of practical skills was important for self-reliance and self-employment. This result agreed with the 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 self-reliance on graduation. This implied that the skill acquisition of metalwork students in technical colleges would be updated to reflect the current changes in today's world of work with regards to

self-reliance. There is a need to equip the student's with adequate practical skills to enhance self-reliance and self-employment on graduation.

The findings also revealed that the students were deficient in 24 out of the skills answered by research question two shown. Therefore students needed more training to enable them acquire necessary skills needed for self-reliance in the areas they were deficient. According to Golden (2009), skills encompass everything that students 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 technology skills for self-reliance as answered by research question three the respondents agreed that they militated against the acquisition of skills by metalwork technology students in technical colleges in Ondo state. 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, equipment and materials 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 self-reliance.

Conclusion

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

Recommendations

Based on the conclusions of the study, it was recommended that;

1. The teaching of practical work in metalwork 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 self-reliance on graduation.
3. Qualified metalwork instructions should be employed to enhance skills acquisition by the students.

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