

Emerging challenges in teaching machine woodworking in vocational institutions in Nigeria

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Keywords

Machine Woodworking, Technical and Vocational Education, Skill Acquisition.

Abstract

The problems confronting teaching of machine woodworking in vocational institutions in Nigeria are inadequate number and type of machines and the large number of students offering courses related to machine woodworking. This paper primarily investigates how teachers are coping with the teaching of machine woodworking in the face of these problems. A structured questionnaire of 20 items was used to collect data from a sample of 140 respondents from a population of 600. The data analysis revealed that with the increase in the number of learners, there must be corresponding adequate provision of machine tools in the workshops for effective Technical and Vocational Education (TVE) delivery.

1. Introduction

The National Policy on Education (NPE) (1986 revised) defines technical education as “that aspect of education which leads to the acquisition of practical and applied skills as well as basic scientific knowledge.” In addition, the NPE listed five types of institutions where technical education is to be offered. These are pre-vocational and vocational schools at post-primary level, the technical colleges, the polytechnics and colleges of education (technical) at post secondary level (Oranu 1998). It can be deduced from the foregoing therefore, that technical education is offered at the vocational level in technical colleges for the production of such caliber of manpower referred to as craftsmen/office workers. At the post-secondary level that is in the mono and polytechnics it is offered to produce technicians/technologists (NBTE 1998). According to Olaitan (1999) “technical education is aimed at developing the following; Skills and knowledge required by society, economic development, production and manufacturing, creativity, self-reliance and employment, job creation, self-respect, social contact and participation. From the foregoing, technical education is a skill and productive education needed by any society for satisfaction of the society needs and better environment.

1.1 Statement of the Problem

There is the general impression that the quality of education has fallen and knowledge imparted by the teacher and that imbibed by students have considerably declined. Two problems confront teaching of machine woodworking in vocational institutions in Nigeria. These problems are those of inadequate number and types of machines; both stationary machines and the portable power tools necessary for teaching and learning and the large number of students offering courses related to machine woodworking. The graduates are looked upon as unemployable, because they lack skills required for good quality performance in industries. Also they could not create jobs for themselves due to lack of skills. This has been traced to poor practical and workshop activities while in training.

1.2 Purpose of the Study

The purpose of this study is primarily to investigate how teachers are coping with the teaching of machine woodworking in the face of inadequate equipment and large class size and offer suggestions as to how to remediate the situation. Specifically, the study will investigate:

1. The adequacy of the environment for teaching machine woodworking in vocational institutions in Nigeria.
2. How the environment for teaching machine woodworking in vocational institutions can be improved.
3. Suggestions what would be offered to assist teachers gain more insight into teaching of machine woodworking in vocational institutions.

1.3 Significance of the Study

It is hoped that the outcome of this research will help education planners to emphasize the need of availability and use of equipment and tools in workshops and laboratories in vocational institutions. Both the school authorities and all levels of government will be encouraged to invest more in equipping their workshops and laboratories. It is also hoped that learners will be encouraged to acquire skills that can make them to be self-reliant through the use of equipment and tools during workshop and laboratory exercises.

2. A Brief Survey of Literature

Vocational education has some guiding principles through which it achieves its success. These principles had been articulated into theories. The principle according to Okoro (1993), though they were developed several years ago, they are still useful today as they were when they were first developed by Prosser in the 1940s. The principles specify minimum standards below which effective vocational education cannot be offered. Some of Prosser's theorems as stated by Okoro (1993) that are worthy of consideration in the preparation of vocational technical teachers for quality education include;

- 1) Vocational education will be efficient in proportion as the environment in which the learner is trained, is a replica of the environment in which they must subsequently work. This is also called the environment habit theory (Oranu, 1993). Training on the job itself endures the exact environment.
- 2) Effective vocational training can only be given where the training jobs are carried on in the same way, with the same operations, the same tools and the same machines as in the occupation itself. Another name for this is the process habit theory. It is even futile to train novices for an occupation on obsolete machines. It is even more futile to drill them in performance of work by hand tools when the real occupation uses machine tools for the operations.
- 3) Vocational education will be effective in proportion as it trains the individual directly and specifically in the thinking habits and the manipulative habits required in the occupation itself-specific habit theory.
- 4) Vocational education will be effective in proportion as the instructor has had successful experience in the application of skills and knowledge of operations and processes he undertakes to teach (experienced instructor theory). Oranu (1982) opined that, "the consideration of the intelligence of the instructor in vocational programmes is very important." Vocational education as part of education whereby the individual learns to successfully carry on a gainful employment should be carried on to achieve its desired objectives. This achievement is made possible through the instructional personnel who through their mastery of skills, knowledge and efficient use of tools, machine and instructional materials, impact desire learning to the learner Oranu (1982) added.

5) The only source of content for specific training in an occupation is in the experience of masters of the occupation – origin of content theory.

The physical environment of learning involve the facilities, materials, furniture, learning space, and including such sensory elements as lighting, colour, sound, and other capabilities that make up a place where learners learn. Uche (2002) pointed out that much research evidence has brought to limelight the relationship between physical environment of learning and the amount of learning that can take place. What is the physical environment of learning in our vocational institutions? How adequate is the environment to enhance the implementation of the aims and objectives of the National Policy on Technical Education? It could be recalled that during the past military regimes, the social service sector especially the education system almost collapsed. This motivated the government to set up special funds to resuscitate the sector.

As a result of the problem inherent in the Nigerian system, the Petroleum Trust Fund (PTF) was set up by the Federal Government with part of its mandate as the rehabilitation and provision of basic facilities to public institutions. Not much was achieved by this body. Education Tax Fund (ETF) and the Tertiary Education Tax Fund (TET FUND) are agencies that were set up to take care of education exclusively. There is clear evidence that these bodies have done much in the provision of physical environment that will promote functional learning. However, most vocational institutions do not have adequate building and class space and laboratories to accommodate the students. In most part of Southern Nigeria, thunder storm have de-roofed some buildings. Those constructed with old corrugated roofing sheets may even be dropping water in the laboratories and workshops.

3. Data and Methodology

The design for this study was a survey type and the target population comprises of all teachers of TVE programmes in the eight institutions that offer machine woodworking as a course and employers of products of TVE in the industry totalling 600 (six hundred) individuals. Simple random sampling technique was used to select 140 respondents. Structured questionnaire of 20 items was developed, validated by three experts in technical education and administered to the respondents. It was structured to a modified 4-point scale and coded as follows:

Highly (H = 4); Fairly (F = 3); Low (L = 2); Non Existing (N =1).

Data analysis was carried out in two parts, frequency and mean statistics were used to analyse the data for each research question. In taking decisions a mean (\bar{x}) or grand mean (\bar{x}) equal to 2.5 or above was satisfactory (S) and if they are less than 2.5, the item or research question is not satisfactory (NS).

The following research questions will guide the investigation;

1. How adequate is the environment for teaching machine woodworking in vocational institutions in Nigeria?
2. How do we improve the environment for teaching machine woodworking in vocational institutions in Nigeria?
3. What suggestion would be offered to assist teachers gain more insight into the teaching of machine woodworking in vocational institutions.

4. Analysis and Result

The results are presented research question by research question

Research Question 1

S/N	Questionnaire Items	Respondents(x)	Response (N=140)
1	The facility for teaching and learning TVE programme are adequate for effective skill acquisition	2.21	NS
2	There is effective provision and utilization of instructional materials	2.29	NS
3	There is adequate provision of furniture for large classes.	1.96	NS
4	There are corresponding learning spaces for teaching large classes.	2.50	S
5	The workshops and laboratories are well lighted and ventilated.	1.23	NS
6	The training tools and equipment are carried out using obsolete facilities	2.92	S
7	The training environment is a replica of the environment which the trainee will subsequently work	3.00	S
Grand Mean(x)		2.30	NS

Table 1. How adequate is the environment for teaching machine woodworking in vocational Institutions in Nigeria?

Note: S = Satisfactory; NS = Not Satisfactory

Table one (1) reveals that respondents were satisfied on 3 items of the questionnaire but unsatisfactory of 4 items. Again, with Grand Mean (x) 2.30 suggests that respondents were not satisfied on the status of teaching machine woodworking in vocational institutions in Nigeria.

Research Question 2

S/N	Questionnaire Items	Respondents(x)	Response (N=140)
1	Trainees are trained in the manipulative habits required in the occupation	3.00	S
2	Learners are actively involved in workshop and laboratory activities	2.82	S
3	There are enough tools and machines to take care of the number of students offering machine woodworking.	1.08	NS
4	There are enough working space for students offering machine Woodworking	2.92	S
5	Learning integrates emotional consideration of the learner...	1.98	NS
6	Instructors often expose learners to industrial environments to adequately prepare them	1.68	NS
7	Teachers are proficient to utilize all the available machines, devices and tools in teaching	2.60	S
Grand Mean(x)		2.29	NS

Table 2. How do we improve the environment for teaching and learning machine woodworking?

From table 2 above, respondents were satisfactory on 4 items on the questionnaire and were unsatisfactory on 3 items. With a grand mean (\bar{x}) = 2.29, suggests that respondents were unsatisfied with the environment for teaching and learning of machine woodworking.

Research Question 3

S/N	Questionnaire Items	Respondents(\bar{x})	Response (N=140)
1	Teachers of machine woodworking should often exhibit their practical products for the public to see	2.18	NS
2	The curricular of craft trades are effective enough to realize their goals and Objectives	2.50	S
3	The products of TVE programmes are often subjected to practical session	2.08	NS
4	The skills exhibited by TVE products are the type needed by the industries.	2.21	NS
5	The products of TVE programmes are well packaged to face the challenge of the society.	2.57	S
6	Functional and adequate instructional aids should be made available for teachers.	2.50	S
	Grand Mean(\bar{x})	2.34	NS

Table 3. What suggestions would be offered to assist teachers gain more insight into the teaching of machine woodworking in vocational institutions in Nigeria?

From Table 3: Respondents are divided on the items of the questionnaire. They were satisfied on 3 items and dissatisfied with the other 3 items. However, with a grand mean of 2.34, they were not satisfied with the suggestions put forward to assist teaches gain more insight into teaching of machine woodworking in vocational institutions in Nigeria.

5. Discussion and Summary

An Analysis of data for research question one (1) revealed that curricular of TVE programme is not practical base but more theoretical base. The respondents were not satisfied with the state of tools and equipment for effective skill acquisition. This finding is in agreement with the works of Prosser as stated by Okoro (1993) that vocational training can only be given where the training jobs are carried on in the same way, with the same operations, the same tools and the same machines as in the occupation itself.

The analysis of data obtained from research question two (2) revealed that trainees are trained in the manipulative habit required in the occupation. This finding agreed with the views of Oranu (1982) who asserted that consideration of the intelligence of the instructor in vocational programme is important.

The instructional personnel who through their mastery of skills, knowledge and machines and instructional materials impact desired learning to the learner. However, the finding is not in agreement by the views that only source of content for specific training in an occupation is in the experience of the masters of the occupation.

Analysis of data from research question three (3) revealed that the curricular of craft trades objectives are effective enough to realize their goals and objectives. Even though respondents were divided concerning the items of the questionnaire for this question, the pooled response that gave a grand mean (\bar{x}) of 2.34 suggests that they were not satisfactory on the suggestions that would be offered to assist teachers gain more insight into teaching of machine woodworking in vocational institutions. The truth of the matter is that going by the result

deduced from item three (3) of the questionnaire teachers are handicapped due to lack of functional and adequate instructional aids like functional machine tools and portable power tools, equipment power generators etc. This brings us back to the issue of poor funding of TVE programmes. There is clear evidence that the intervention bodies set up by government (ETF and TETFUND) have not done much in the provision of physical environment that will promote functional learning.

The importance of TVE in a developing economy like Nigeria cannot be over emphasized. It becomes imperative therefore to recognize that the growth in technology of any state or nation must be dependent on the extent of effective and efficient TVE delivery. The test reveals that with the increase in the number of learners and for effective acquisition of scalable skills by the same, there must be corresponding adequate provision of machine tools and portable power tools in the workshops and laboratories for effective TVE delivery.

6. Direction for Future Research

Based on the findings of the study the following recommendations were made to Education Tax Fund, Tertiary Education Tax Fund, and National Board for Technical Education, National Commission for Colleges of Education and the National University Commission.

- 1) For effective acquisition of scalable skills adequate provision of machine tools and portable power tools must be installed in institutions where technical education is offered.
- 2) The teachers and students should make a strong case to both the school authority and government on the need for adequate funding of technical education.
- 3) Seminars and conferences on the need for adequate provision of equipment and tools should be organized. This will sensitize the general public to invest in vocational and technical education.
- 4) Maintenance culture should be adopted in ensuring that equipment and tools are used effectively. The faulty ones should be repaired and put in good working condition.

7. References

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