



Teaching Facilities Required for Wood Workshop Practice in NCE (Technical) Awarding Institution in Nigeria

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Abstract:

Woodwork technology education as a course of study cannot be successful if facilities are sparsely provided. The paper was to determine the appropriateness of workshop facilities to enable operative Woodwork teaching process in NCE (Technical) awarding institution in northwest Nigeria. Relevant related literature to the woodwork technology facilities were reviewed. An objective with corresponding Research Questions and a null hypothesis was tested at 0.05 level of significance guided the study. The research adopted a descriptive survey design. The study was carried out in NCE Technical Awarding Institution in Northeastern Nigeria. The instrument for data collection was a structured questionnaire. The Cronbach Alpha coefficient method was used to determine the internal consistency of the instrument. The population of the study consists of 58 lecturers and 32 technician which totaled to 90. The entire population was used there is no sampling. The instrument for data collection is a structured questionnaire. The study findings confirmed that the absence of woodwork technology facilities is a contributing factor to the failure of students in the subject. It can therefore be concluded that woodwork technology workshop, equipment and facilities are of great importance in imparting technological concepts to the students. Hence, there is necessity to have well-equipped workshops with adequate facilities to provide functional training by impart the necessary skills leading to the production of technical trade teachers and other skilled personnel.

Keywords: Facilities, Competence, Teaching.

Background of the study

It is evident that woodwork technology education as a course of study cannot be successful if facilities are sparsely provided (Odo, Adenle, Okwori (2012)). The real application of TVE curriculum to attain intended objectives or resulting consequence hinged on on the quality of the teacher's capability to excellently use the equipment, tools and materials to teach the learners acquire the contents of the curriculum. Effective implementation TVE curriculum to achieve planned objectives or derived outcome depends on the quality of the teacher's ability to effectively manipulate, operate, and use equipment, tools and materials to help learners learn the contents of the curriculum. Rufai, Muhammad and Idris (2013).

Facilities can be defined as buildings, properties and major infrastructure which include physical and material assets. Facilities in schools are materials resources that enhance teaching and learning thereby making the process meaningful and purposeful. It includes the entire school plant which school administrators, teachers and students harness, allocate and utilized for the smooth efficient

management of any educational institutions, for the main objectives of bringing about effective and purposeful teaching and learning experiences. (Asiyai 2012)

FGN (2004) listed six factors that should be put into consideration while constructing a workshop for technical education and for remodeling old ones. They are:

- Consideration for aims and objectives of the course to be taught must be useful to the locality and have a relevant philosophical base.
- 2. The use of units makes the content of course to be offered as a guide for providing hand tools and other equipment.
- 3. Method and approach should govern the placement of equipment; also the limited general shop shall call for a different arrangement to that used for multipurpose type.
- The number of students that will be scheduled in the shop at any given time must be considered.
- Age and mental capacity of students will affect the size of the workshop and equipment. 21
- The resources available must be considered. The type of equipment and the expenditure for it must coincide with the money available for the programme.

According to Okoye and Onyenwe (2016) To achieve the sub-goals of equipping students to live effectively in the age of science and technology, the practice of starving the schools of equipment, facilities and fund need to change. It is very clear that technical education is expensive to establish and maintain when infrastructure, equipment and cost of teacher training are carefully addressed. Another school of thought believe that the major issue is that of the attitude of the society towards skilled programmes. The society chooses intelligently oriented professions hence, appropriate interest has not been polished for occupational programme in the Nigerian culture. The future of any nation rest in the hands of the quality of the teachers because the talents they have and display today will unavoidably be replicated in the performance of the people of tomorrow. The motive behind the quality training of Vocational and Technical Education teachers is to be well drilled with adequate skills, knowledge and abilities needed for technological progression through the use of appropriate needed facilities.

In most colleges, the facilities and equipment are either grossly inadequate, or where few are available but not installed and put to use or that the equipment are not there at all or that these equipments are put out of use because of poor maintenance culture. As a result, the products turned out as graduate in most of our N.C.E. (Technical) Programmes are unskilled personnel who is adequately not governed with the a-z of the contents of the course he has chosen to study (Tijani, Adeyemi and Omotehinshe 2016)

NCCE Voc. & Tech. NCE Minimum Standard (2012) outlined Woodwork tools and equipment required as follows:

1. Work Benches with vices
2. Circular saw bench
3. Surface Planer
4. Panel Planer
5. Band saw
6. Cross cut sawing machine
7. Wood lathe with accessories
8. Compressor and spraying unit
9. Metal jack planes
10. Metal smoothing planes

11. Block plane
12. Rebate plane
13. Grooving/Plough plane
14. Compass plane
15. Saws (assorted)
16. Chisels (assorted)
17. Hammers (assorted)
18. Bits (assorted)
19. Clamps (assorted)
20. Power hand tools
21. Mallets
22. Ratchet brace
23. Coping saws
24. Drilling machine
25. Ruler (meter rule)
26. Rasps
27. Spoke shaves
28. Screw drivers

Besmart-Digbori (2018) Woodworking Machinery for the teaching and learning Woodworking Trades require for NCE are as followe:

➤ Sawber saw is adequate	➤ Table saw is adequate
➤ Portable electric drill is adequate	➤ Jointer is adequate
➤ Power plane is adequate	➤ Band saw is adequate
➤ Portable router is adequate	➤ Surface is adequate
➤ Portable sander is adequate	➤ Lathe machine is adequate
➤ Radial saw is adequate	

Peterit (2018) declared Principals must ensure that teachers have appropriate training and experience with the use of the machines and equipment that students will use in their workshops. All machinery and equipment must be maintained in safe working condition. Smith (2019) specified the list of essential hand tools for woodwork in NCETechnical awarding institutions as follows:

➤ <u>Claw Hammer</u>	➤ Shop-Vac
➤ <u>Tape Measure</u>	➤ Bench Grinder
➤ <u>Utility Knife</u>	➤ Circular Saw
➤ <u>Moisture Meter</u>	➤ Power Drill
➤ <u>Chisel</u>	➤ Sabre Saw
➤ <u>Level</u>	➤ Palm Sander
➤ <u>Screwdriver</u>	➤ Random Orbital Sander

➤ <u>Nail Set</u>	➤ Table Saw
➤ <u>Sliding Bevel</u>	➤ Rip Fence
➤ <u>Layout Square</u>	➤ Miter Gauge
➤ Block Plane	➤ Jig and Dado
➤ Caliper	➤ Compound Miter Saw

➤ Clamp	➤ Router
➤ Jig	➤ Band Saw
➤ Hand Saw	➤ Radial Arm Saw
➤ Feather Board	➤ Drill Press
➤ Metal Detector	➤ Surface Planer
➤ Saw Horse	➤ Jointer
➤ Workbench	➤ Manual
➤ Tool Storage System	➤ Safety Equipment

According to Aina and Adedo (2013) Technical teachers' training is very fundamental if such teachers are to perform the necessary and acceptable task in the methodology of inculcating knowledge, practical techniques to student. They should be fully trained and be proficient craftsmen with reasonable period of industrial and practical experiences. Ma'aji, (2002). reported that to enable the Objectives of Vocational and Technical Education to be realized in the institutions for carrying capacity, the provision of equipment and Facilities in Vocational and Technical Education Programme should be addressed properly and be supplied to various institutions (Umunadi, 2011). The poor-quality training in Technical Education in Nigeria has also been blamed on inadequate funding, inadequate and poor-quality laboratory/workshops equipment, facility obsolescence, and curricular that are out of pace with the new technology needs.

The facilitating of the technical teacher programme will enrich the aim of the Nigeria Certificate in Education (NCE) Technical Programme, which is to provide technical teachers with the intellectual and professional background adequate for teaching technical subjects and to make them adaptable to any changing situation in technological development, not only in the country, but also in the wider arena of the world at large (NCCE, 2008).

Technical Education is practical oriented education which makes it unique in its content and approach thereby demanding special attention. The expectation always is that, throughout the practical activities, students are provided with required experiences leading towards acquisition of hands-on-the-job skills. The competencies are assessed from students' abilities to execute practical work (Dauda 2012). Hence the problem of this investigation is to find out the training facilities required for training of qualified woodwork teachers in technical teacher training institutions in the area under study.

Objectives of the Study

Identify facilities needed for Woodwork Technology in NCE (Technical) awarding institution in Nigeria.

Research Questions

What facilities are needed for woodwork technology in NCE awarding institution in Nigeria?

Hypotheses

There is no significant difference in the mean responses of lecturers and technologist of woodwork technology on facilities required for the study of practical skills in woodwork trades at NCE (Tech) awarding institutions.

Methodology

The research adopted a descriptive survey design. Shona (2019) Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer *what, where, when* and *how* questions, but not *why* questions. The study was carried out in NCE Technical Awarding Institution in North Western Nigeria which is one of the Geopolitical Zones of the country that consists of seven states. The population of the study consists of 58 lecturers and 32 technologist which totaled to 90. The instrument for data collection is a structured questionnaire. The entire population was used there the is no sampling,. Method of data collection: The questionnaire items were generated and adapted after broad review of available literature on Instructional content of

Woodwork Technology. The Cronbach Alpha coefficient method will be used to determine the internal consistency of the instrument. According to Brown J. D. (2002) Cronbach alpha provides an estimate of the internal consistency of the test. The data collected was analysed using Minitab version (20). A five (5) point rating scale were also be used to analysis each of the questionnaire items. The data generated were analyzed using mean and standard deviation for the research question and theindependent t-test for the hypothesis.

RESULTS

Research question: What Facilities are required for Woodwork Technology in NCE (Tech.) in Nigeria?

Table 2: Mean and Standard Deviation Respondents (lecturers and technologies) on the Facilities needed for teaching Woodwork Technology in NCE (Tech.) in Nigeria

	Construct	\bar{X}	T_2	S_1	LS_2	T	\bar{X}	G	Remark
1	Work Benches with vices	4.31	4.30	0.48	0.48	4.31			Highly Required
2	Circular saw benches	4.13	4.10	0.96	1.20	4.12			Highly Required
3	Surface Planers	4.31	4.40	0.48	0.52	4.23			Highly Reliable
4	Panel Planers	4.00	3.90	0.63	0.74	3.96			Moderately Required
5	Band saws machine	4.38	4.40	0.50	0.52	4.39			Highly Required
6	Cross cut sawing machines	4.31	4.30	0.48	0.48	4.31			Highly Required
7	Wood lathe with accessories	4.19	4.20	0.40	0.42	4.19			Highly Required
8	Compressor and spraying unit	4.00	3.90	0.97	1.20	3.96			Moderately Required
9	Metal jack planes	4.19	4.20	0.98	1.23	4.19			Highly Required
10	Metal smoothing planes	4.00	4.00	0.73	0.82	4.00			Highly Required
11	Block planes	3.63	3.50	0.50	0.53	3.58			Moderately Required
12	Rebate planes	4.06	3.80	0.77	0.79	3.96			Moderately Required
13	Grooving/Plough planes	3.69	3.60	0.48	0.52	3.66			Moderately Required
14	Compass planes	3.75	3.70	0.58	0.67	3.73			Moderately Required
15	Hand saws (assorted)	4.19	4.20	0.98	1.23	4.19			Highly Reliable
16	Chisels (assorted)	4.19	4.20	0.98	1.23	3.19			Moderately Required
17	Hammers (assorted)	4.19	4.20	0.98	1.23	3.19			Moderately Required
18	Bits (assorted)	3.94	3.90	1.06	1.29	3.92			Moderately Required
19	Clamps (assorted)	4.06	4.10	0.68	0.74	4.08			Highly Required
20	Power hand tools	3.88	3.80	1.02	1.23	3.85			Required

21	Mallets	4.44	4.50	0.51	0.53	4.46	Highly Required
22	Ratchet braces	3.88	3.70	0.89	1.06	3.81	Moderately Required
23	Coping saws	3.81	3.70	0.91	1.06	3.77	Moderately Required
24	Drilling machines	4.31	4.30	1.01	1.25	4.31	Highly Required
25	Rulers (meter rules)	4.19	4.20	0.98	1.23	4.19	Highly Required
26	Rasps	3.69	3.60	0.48	0.52	3.66	Moderately Required
27	Spoke shaves	3.81	3.80	0.40	0.42	3.81	Moderately Required
28	Screw drivers	4.06	4.00	0.44	0.47	4.04	Highly Required
	Grand total	4.06	3.99	0.72	0.84	3.89	Moderately Required

Note: Lecturers = 58, Technologist =32

The result in research question displayed that 14 items out of 28 Facilities required for woodwork technology were commented as Very highly Required over the mean between 4.50 to 5.00, 14 items out of 28 by means of mean scores 4.00 to 4.49 were as a result considered Highly Required. This detailed that lecturers and technologist accepted the items as highly required in the Instructional manual for teaching Woodwork Technology in NCE awarding institutions.

RESEARCH HYPOTHESIS: There is no significant difference in the mean responses of lecturers, technologist on facilities required for the study of practical skills in woodwork trades at NCE (Tech) awarding instructions.

Table 3: Independent t-test for lecturers and technologists’ on the facilities of woodwork technology in NCE (Tech.).

N MeanStd. Deviation				T	P-values	Decision
	Lecturers	58	4.0800	.39340		
	Technologist	32	4.0180	.57596	-.327.	-.476
						Null hypothesis upheld

Based on the independent t-test, there is no significant difference between the mean response of lecturers and technologists’ on the facilities required for woodwork technology training in NCE (Tech.). Therefore, the null hypothesis is upheld.

Findings

The finding of this study in table: 4 on the Facilities required for Teaching Woodwork Technology identified that the mean rating scores for lecturers and technologies ranges between 4.38 and 4.41 with standard deviation of 0.680 and 0.725 respectively. This result defined that lecturers and technologist proven the items in research question 3 on facilities required as Highly Required in teaching Woodwork Technology in NCE awarding institutions.

The study found out that lecturer and technologist of woodwork technology opined that all the items are Highly Required with the grand mean 4.35on the facilities of instructional manual for teaching woodwork technology in NCE (Technical) awarding institution.

Discussions of the Findings

The study findings confirmed that the absence of woodwork technology facilities is a contributing factors to the failure of students in the subject. It can therefore be concluded that woodwork technology workshop, equipment and facilities are of great importance in imparting technological concepts to the students. This rammed with the study finding of Abdulkadir, Sabo, Hassan, Adu, Kareem, & Idris (2021) as revealed that there is adequate and qualified teachers and technicians. Infrastructural facilities, hand tools, woodworking power tools and consumables available for the programme are inadequate. To achieve this objective, it does not only require human resources, but also requires material, tools, equipment and skills. Skills are not acquired in a vacuum, in other to enhance standard and quality, proper instructional material must be available which forms the greatest aspect of skill acquisition.

Conclusions

Based on the findings of the study, the following conclusions were drawn: the problems come across by teachers on practical activities are owing to poor supply of equipment and facilities in the technical teacher training institutions. The requirement of the equipment and facilities is a stirring factor against teaching outstanding practical performance in woodwork trades. Additional features may involve workshop areas, suitability of space for training and insufficiency of workshop space.

Recommendations

- Government should provide all NCE Awarding Institution with adequate woodworking tools, equipment, machines (facilities) needed and the copy of the developed Instructional Manual for effective teaching in order to acquire the desired woodwork knowledge and skills.
- The institutions should come with a policy for smooth running of consultancy services so as to be able to generate the fund for taking care of the practical consumable and maintenance services

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