

Assessment of Resources Required for Woodwork Technology Education Programme in College of Education, Minna, Niger State.

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Abstract

The paper examines the adequacy of resources required for Woodwork Technology Education Programme in College of Education Minna, Niger State, Nigeria. A survey research design was adopted for the work. The inventory of wood workshop and Minimum Standard for Vocational and Technical Education produced by the National Commission for Colleges of Education, Abuja, Nigeria were used for the study. The instrument for data collection used was a questionnaire and the data were analysed using Mean and Standard Deviation. The findings of the study 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. Recommendations were made which would boost resource provision for effective running of Woodwork Technology education programme in College of Education Minna, Niger State. These recommendations include Head of Section of Woodwork Technology should assess the resources and equipment in the workshop at the end of every month to know the damaged or missing tools and report to the College management for replacement. The National Commission for Colleges of Education in charge of evaluating Colleges of Education in Nigeria should take the issue of facilities very serious if not the objectives of the programme will not be achieved.

Keyword: Assessment, Facility, Woodwork Technology Education

Introduction

Woodwork Resources refers to the physical environment, human and material resources, facilities and instructional services designed to achieve the objectives of Woodwork Technology. When the required resources are not provided, effective Woodwork Technology Education cannot take place especially in the aspect of the acquisition of practical skills.

Uwaifo (2010) explained that most Technical Education departments in Nigeria Colleges of Education do not have standard workshop space let alone usable equipment and other resources and where they exist, they are grossly inadequate, as the workshops only have the equipment that was provided when the departments were established. It is, however, most surprising to know that most Technical Education departments still depends on workshop and lecturers to teach Technical Education concepts in this 21st century. The available resources as of today are inadequate quantitatively and qualitatively and besides, most of the equipments obsolete.

There is a dearth of ICT resources for the training of students. The high cost of computer and teaching aids ownership is a major constraint to the acquisition of the items. Access to affordable and reliable internet connectivity is only available in a few institutions and offices, even then, power fluctuations have considerably reduced the reliability of the access and inadequate

bandwidth also makes access difficult. This means that the objectives of Technical Education will be difficult to achieve.

Sara (2001), observed that more than 60 per cent of the staff teaching Woodwork Technology could not perform the skills or provide technical services they were expected to teach others despite their high-level paper qualifications. This is of course due to non-skill acquisition from their respective institutions of higher learning.

Okwori (2012) revealed that after visiting ninety-one (91) technical colleges across the country by the National Board for Technical Education (NBTE) to assess their resources, it was discovered that eight or 1.5 percent had adequate equipment. If students do not practice craftwork they would not appreciate and advance in technology. Assessment of technical and vocational education programmes refers to the process of determining the strengths and weaknesses of the programme using some criteria. Uwaifo (2010) viewed assessment of technical and vocational education programmes as the process of providing information to people as they designed the curricular after obtaining some data about the programme.

Objectives of Technical Education in Nigeria

The National Commission for Colleges of Education, (2002) stated the objectives of the Technical Education programme in Colleges of Education in Nigeria which Woodwork Technology is inclusive. The objectives include:

1. To produce qualified technical teachers and practitioners of technology capable of teaching introductory Technology in the Junior Secondary Schools.
2. To produce NCE teachers who will be able to inculcate scientific and technological attitudes and values into society.
3. To produce qualified technical teachers motivated to start the so much desired revolution of technological development right from the Nigerian Schools.
4. To prepare technical teachers to qualify them for an undergraduate programme in Technical Education. It can be seen from the objectives that Resources are very essential to produce qualified Woodwork Technology teachers who can inculcate scientific, technological attitudes and values into society.

Statement of the Problem

Resources in the woodwork programmes are used by teachers and students to make it easy. Resources help teachers to translate abstract ideas to concentrate ideas. Okwori (2012), explained the contributions of using resources as follows: aid in attracting the attention of students and as a result improve their interest level, stimulate students' interest to participate in the activities, help students to picture reality in what has been taught and create an interactive learning environment thereby facilitating effective. When students in Woodwork Technology education are trained without facilities, they find it difficult to teach the practical aspect of the course after graduation. Umar and Ma'aji (2011), pointed out that the goal of Vocational and Technical Education institutions is to prepare students for successful employment in the labour market and this condition can be met through a well-equipped workshop with relevant training resources.

Purpose of the Study

The study assessed:

1. The availability of human resources for Woodwork Technology Education in College of Education, Minna, Niger State.
2. The adequacy of infrastructural facilities for Woodwork Technology Education in College of Education, Minna, Niger State.
3. The adequacy of hand tools for Woodwork Technology Education in College of Education, Minna, Niger State.
4. The availability of power tools for woodwork technology education in College of Education, Minna, Niger State.
5. The availability of consumable materials for woodwork technology education in College of Education, Minna, Niger State.

Research Questions

The following research questions guided the conduct of this study:

1. What are the human resources available for woodwork technology education in the College of Education, Minna, Niger State?
2. What are the infrastructural facilities available for woodwork technology education in the College of Education, Minna, Niger State?
3. What are the hand tools available for woodwork technology education in the College of Education, Minna, Niger State?
4. What are the power tools available for woodwork technology education in the College of Education, Minna, Niger State?
5. What are the consumable materials available for woodwork technology education in the College of Education, Minna, Niger State?

Literature Review

Resources for teaching Woodwork Technology in Colleges of Education are essential for the students to practice what they have learnt in class. When students acquire the needed practical skills while in school then they can easily set up their private workshops after graduation and those who will take up an appointment with the government or industries can effectively perform well in the practical aspect. According to Okwori (2012), Woodwork Technology is that type of training intended to prepare the students to earn a living in an occupation in which success is dependent largely on an understanding of technology as applied to modern technology and design. This type of education provides skills, knowledge and attitudes necessary for effective employment in a specific occupation (Okoro, 1993). Woodwork Technology, therefore, involves the engagement of both teachers and students in theory and practice.

The developed technology has contributed immensely to the high economic and social standards of most of the developed countries of the world. Therefore, the development of Woodwork Technology in our Colleges of Education cannot be achieved without adequate resources. Olumese, explained that Nigeria like most developing nations of the world requires a well-articulated Woodwork Technology to enable her to achieve economic and technological development but with the prevailing problems of Woodwork Technology (especially inadequate equipment) its dependence as a base for the nation's progress cannot be a reality except quick steps are taken to forestall it.

For effective teaching of Woodwork Technology to take place, it is considered quite appropriate that prospective teachers should interact with the teaching environment. The students start to learn when they are involved in the learning situation. At present we have Woodwork Technology teachers who emphasize more on theoretical aspects in the workshop with no emphasis on practical due to lack of facilities. If the Woodwork Technology course is well taught in Colleges of Education many of the students graduating from these institutions will engage in business or open their workshops instead of waiting for government work. Jackden and Okwori (1997) advised the Federal and State Governments to invest in Woodwork Technology to hasten the nation's technological advancement. The key to national development is technology and this can be acquired and attained if we have a proper investment in Woodwork Technology. They warned that there would be no technological breakthrough without the development of the necessary infrastructure for qualitative education. Inadequate investment in Woodwork Technology makes it difficult to compete in the structural work in terms of skills and expertise so we have to act to move away from the era that focuses mainly on liberal arts. Ntoiden (2003) pointed out that if we have the necessary equipment, and workforce to manufacture our vehicles, household furniture and so on, it will help us to be more self-reliant and conserve foreign exchange for other uses. Most of the products of technology are imported into the country. This makes them very expensive for the average person to afford. If we can produce such things in Nigeria using locally sourced raw materials, the cost will be reduced.

Methodology

The research design adopted for this study was a descriptive survey research design. A descriptive survey employs the use of questionnaires, interviews and direct observation to ascertain the opinions, attitudes, perceptions and preferences of individuals under study. This study was carried out in the Department of Technical Education, College of Education, Minna, Niger State. The targeted population for this study is 16 comprising 10 woodwork technology students, 3 Woodwork Teachers, 2 technicians and the Head of the Department. The entire population was used since it is manageable. A structured questionnaire that contains 84 items was used to collect the needed data from the respondents. The questionnaire was categorised and labelled A – E with the category representing the research question. The questionnaire items were structured using a three-point rating scale with response options of Adequate (A) – 3, Inadequate (IA) – 2, Not Available (NA) – 1, for all the research questions. The instrument was validated by a lecturer from the Industrial and Technology Education Department, Federal University of Technology, Minna. It was trial tested in Hassan Usman Katsina Polytechnic with a population of 5 respondents from the woodwork section of the Technical Education department. Cronbach's Alpha value of 0.80 was obtained using the population of the pilot study. The data was analysed using Mean and Standard Deviation.

Results

Research Question 1

What is the adequacy of human resources available for woodwork technology education in the College of Education, Minna, Niger State?

Table 1. Mean Response of staff and Woodwork Technology students on the adequacy of Human Resources available for Woodwork Technology Education in College of Education Minna, Niger State

S/N	The following human resource are available in the department	ITEMS		Remarks
		Mean	SD	
1	Qualified Woodwork Teacher	2.50	0.63	Adequate
2	Qualified Woodwork Technicians	2.50	0.73	Adequate
3	Workshop Attendants	1.56	0.73	Inadequate
Grand Mean and SD		1.64	0.52	

Table 1 revealed that there is adequate qualified woodwork teachers and technicians but inadequate workshop attendants for woodwork Technology Education in the Technical Education Department of College of Education Minna, Niger State.

Research Question 2

What are the infrastructural facilities available for woodwork technology education in the College of Education, Minna, Niger State?

Table 2. Mean Response of staff and Woodwork Technology students' on the adequacy of infrastructural facilities for Woodwork Technology Education in College of Education Minna, Niger State

S/N	The following infrastructural facilities are available and adequate in the College	ITEM		Remarks
		Mean	SD	
1	Classroom Blocks	1.44	0.63	Inadequate
2	Workshop	1.50	0.73	Inadequate
3	Store	1.50	0.52	Inadequate
7	Library	1.50	0.63	Inadequate
8	Staff office	1.75	0.77	Inadequate
9	Toilet	1.81	0.66	Inadequate
10	Bore hole	1.63	0.81	Inadequate
11	Extinguishers (including fire buckets)	1.56	0.73	Inadequate
12	Workbench	1.56	0.73	Inadequate
13	First aid box	1.63	0.81	Inadequate
Grand Mean and SD		1.44	0.64	

Table 2 revealed that classroom Blocks, workshop, store, Library, staff offices, toilets, Boreholes, Extinguishers (including fire buckets), workbench and First Aid box for woodwork Technology Education in the Technical Education Department of College of Education Minna are inadequate.

Research Question 3

What are the hand tools available for woodwork technology education in the College of Education, Minna, Niger State?

Table 3. Mean Response of staff and Woodwork Technology students on the adequacy of Hand tools available for Woodwork Technology Education in College of Education Minna, Niger State.

S/N	ITEM	Mean	SD	Remarks
	The following hand tools are available and adequate in the Wood workshop			
1	Paint brushes (various sizes)	1.69	0.70	Inadequate
2	Marking gauge/mortise gauge	1.63	0.62	Inadequate
3	Marking knives	1.69	0.79	Inadequate
4	Try square	1.75	0.68	Inadequate
5	Mitre square	1.56	0.73	Inadequate
6	Sliding bevel	1.69	0.79	Inadequate
7	Measuring tape (metric)	1.44	0.51	Inadequate
8	Jack plane	1.75	0.77	Inadequate
9	Smoothing plane	1.81	0.75	Inadequate
10	Rebate plane	1.56	0.73	Inadequate
11	Multi plough plane	1.69	0.79	Inadequate
12	Spoke shaves (straight/round)	1.50	0.63	Inadequate
13	Rip saw	1.63	0.81	Inadequate
14	Crosscut/handsaw	1.75	0.77	Inadequate
15	Tenon saw	1.69	0.70	Inadequate
16	Panel saw	1.19	0.40	Inadequate
17	Coping saw	1.56	0.51	Inadequate
18	Keyhole saw	1.50	0.63	Inadequate
19	Dovetail/back saw	1.56	0.63	Inadequate
20	Sets of firmer chisel	1.63	0.81	Inadequate
21	Sets of mortise chisel	1.50	0.63	Inadequate
22	Sets of turning chisel	1.75	0.86	Inadequate
23	Sets of twists bits	1.94	0.68	Inadequate
24	Countersink bit	2.13	0.89	Adequate
25	Rose	1.50	0.52	Inadequate
26	Ratchet braces	1.69	0.79	Inadequate
27	Auger bits	1.63	0.62	Inadequate
28	Sets of drill bits	1.75	0.86	Inadequate
29	Sets of screw drivers	1.69	0.60	Inadequate
30	Mallet	1.75	0.77	Inadequate
31	Craw hammer	1.75	0.77	Inadequate
32	Pein hammer	1.81	0.75	Inadequate
33	Warrington hammer	1.75	0.77	Inadequate
34	Bradawl	1.75	0.68	Inadequate
35	Pincers	1.81	0.91	Inadequate
36	F-cramp	1.50	0.73	Inadequate
37	Sash cramp	1.69	0.79	Inadequate
38	G-cramp	1.50	0.73	Inadequate
39	Bench-hold fast	1.63	0.72	Inadequate

40	Sets of triangular files	1.69	0.79	Inadequate
41	Flat files	1.75	0.77	Inadequate
42	Scraper (flat)	1.50	0.63	Inadequate
43	Dividers	1.44	0.51	Inadequate
44	Sets of round files	1.69	0.87	Inadequate
45	Half-round files	1.50	0.63	Inadequate
46	Scraper (cabinet)	1.56	0.81	Inadequate
47	Callipers (set) inside and outside	1.44	0.63	Inadequate
48	Dowelling jig	1.75	0.86	Inadequate
49	Rasps	1.75	0.86	Inadequate
Grand Mean and SD		1.62	0.70	

Table 3 revealed that all tools available for woodwork Technology Education in Technical Education Department of College of Education Minna are inadequate except for countersink bit.

Table 4. Mean Response of staff and Woodwork Technology students' on the adequacy of woodworking power tools available for Woodwork Technology Education in College of Education Minna, Niger State.

S/N	ITEM	Mean	SD	Remarks
	The following woodworking power tools are available and adequate in the Wood workshop			
1	Circular saw bench	1.69	0.79	Inadequate
2	Thicknesses (optional)	1.50	0.63	Inadequate
3	Surface planner	1.50	0.52	Inadequate
4	Wood-lathe	1.63	0.72	Inadequate
5	Band saw (optional)	1.31	0.60	Inadequate
6	Compressor and spraying units	1.81	0.91	Inadequate
7	Circular saw	1.75	0.77	Inadequate
8	Router	2.00	0.82	Adequate
9	Orbital sander	1.81	0.66	Inadequate
10	Disc sander	1.81	0.83	Inadequate
11	Jig saw	1.63	0.72	Inadequate
12	Blower	1.56	0.63	Inadequate
13	Spraying Machine unit	1.44	0.51	Inadequate
14	Drill Press	1.44	0.73	Inadequate
Grand Mean and SD		1.53	0.66	

Table 4 revealed that all woodworking power tools available for woodwork Technology Education in Technical Education Department of College of Education Minna are inadequate except for Router.

Table 5. Mean Response of staff and Woodwork Technology students’ on the adequacy of consumable materials available for Woodwork Technology Education in College of Education Minna, Niger State.

S/N	ITEM	Mean	SD	Remarks
	The following consumable materials are available and adequate in the Wood workshop			
1	Wood (Solid and Manufactured Boards)	1.44	0.63	Inadequate
2	Nails of various sizes	1.50	0.63	Inadequate
3	Wood glue	1.56	0.73	Inadequate
4	Screws of various sizes	1.50	0.63	Inadequate
5	Abrasive Papers (Different grades)	1.56	0.73	Inadequate
6	Cellulose Thinner	1.63	0.72	Inadequate
7	Finishes	1.56	0.73	Inadequate
8	Fittings	1.69	0.60	Inadequate
	Grand Mean and SD	1.38	0.60	

Table 5 revealed that all consumable materials available for woodwork Technology Education in Technical Education Department of College of Education Minna are inadequate.

Discussion of Findings

Equipment are an integral part of Woodwork Technology for imparting practical skills to learners. The finding of the study revealed that Router and Countersink bit were found available and adequate. Musa (1993) decried the level of inadequacy in infrastructural provisions in our technical institutions. He said that there have been cases where technical students graduate without adequate skills on how to use tools and machines. Therefore, assessment of Resources in technical workshops is very essential and the recommendations to the appropriate authority for supplying the unavailable ones are necessary.

Olumese (2004) quoted a previous report of the National Board for Technical Education (NBTE), which revealed that after visiting 91 Technical Colleges across the country to assess their resources, it was discovered that eight or 1.5 percent had adequate equipment. Sharing a similar opinion, Ike *et al* (2011) pointed out that there is a need for adequate resources in school workshops. He suggested that the only way of determining the level of available tools and equipment in the workshops is to check the tools and machines available in woodwork departments. He emphasized that sustainable technological development cannot be achieved if school workshops are amid inadequate equipment. While Jackden and Okwori (1997) asserted that many Colleges of Education do not have the necessary power tools and hand tools essential for students’ use. Teachers and students can only develop new technologies when they have enough hand tools and machines to practice what they have learnt in theory. This will also encourage discovery in technology.

Recommendations

The following recommendations were made based on the finding of the study:

1. Woodwork Technology Head of the section should assess the resources available in the department at the end of every month to know the damaged or missing tools and report to the college management for replacement. The unavailable machines should also be requested.
2. The storekeeper should be very vigilant to prevent missing tools and machines in the store and report any missing and worn-out tools.
3. After assessing the tools, some vital ones that are not available can be improvised.
4. National Commission for Colleges of Education in charge of evaluating Colleges of Education in Nigeria should take the issue of the facility very serious if not the objectives of the programme will not be achieved.

Conclusion

It is difficult for learners to acquire the needed practical skill when Resources are inadequate. Therefore, assessment of Resources in the Woodwork Technology workshop is very essential since it is a practically orientated course that needs adequate equipment so that the graduates can establish their wood workshops without relying on the government for employment. Government alone cannot provide all the resources needed for Woodwork Technology education. Therefore, the college and the department should explore other avenues like an industrial enterprise for acquiring resources that are neither inadequate nor available in wood workshops for students' practical.

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