INVESTIGATING THE SKILL COMPETENCE AND CRAFT QUALITY OF TECHNICAL COLLEGE-TRAINED WOODWORKERS IN NIGER STATE

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Abstract

The study sought to evaluate the competence of woodwork craftsmen trained in technical colleges in Niger State. Specifically, it examined the craftsmen's proficiency in operating woodworking machines, handling consumable materials, using hand tools with dexterity, and employing maintenance equipment effectively. To guide the investigation, four research questions and two null hypotheses were formulated. Relevant literature reviewed included the history of vocational and technical education, evaluation methods in vocational training, practical skill development in woodwork, occupations in woodworking, and the availability of training facilities in Niger State technical colleges. The study adopted a descriptive survey design, targeting woodwork heads of sections and practicing woodwork craftsmen. Data were collected using a 48-item questionnaire and analyzed using frequency counts, means, standard deviations, and t-tests. Findings revealed that craftsmen demonstrated accuracy and skill in using machines such as drills, circular saws, and lathes, as well as hand tools like hand planers, pincers, and steel squares. The study recommended that both federal and state governments should actively support the improvement of woodwork training in technical colleges by providing adequate tools, machines, and resources to enhance students' skill acquisition.

Keywords: Woodwork Craftsmen, Technical Colleges, Skill Competence, Hand Tools, Woodworking Machines, Niger State, Vocational Education

Introduction

Wood is a hard, tough substance that forms the trunk of a tree; it has been used for thousands of years as a fuel and as a material for construction. Technically, the term *wood* includes materials in other parts of the plant including even the veins in leaves. The process of working with wood is called woodwork. Woodwork refers to wooden interior fittings in a house, as moldings, doors, staircases, or windowsills. According to the McMillan dictionary (2009), woodwork is also seen as the activity or skill of making objects from wood by woodwork craftsmen.

Woodwork craftsmen are set of craftsmen who use a wide range of tools to adjust, test, diagnose, construct and completely repair any fault on the objects made of wood (NBTE,

2001). In small shops, they may work on a wide variety of repair and construction jobs while in larger workshops, they may specialize in repairing, rebuilding and construction of an object using wood. Before woodwork craftsmen begin a job they must have a complete sets of construction drawing and must be familiar with how the drawing are prepared to comply with the requirement by reading the work order using their sight, sound, feel and smell.

It is a well known fact that effective training in skill acquisition has immensely contributed to the technological excellence and economic self-reliance of the industrialized nations. It is to this fact that Okorie and Ezeji (1988), while stressing on the importance of technical skill acquisition, they said that proper and adequate skill acquisition is a means of increasing the productivity of a nation. However, while contending the indispensable role of skill acquisition in national growth, Eze (1989) observed that Nigeria's industrial development is largely dependent on available competent workforce.

The shortage of skill personnel especially at the middle manpower level is a reflection of the state of technical education in Nigeria. The development of any nation depends largely upon the effectiveness of the vocational and technical education which should provide the needed productive labour force for economic progress of that society. In order to determine and evaluate the achievement of the aims and objectives of establishing, technical colleges in Nigeria, National Business and Technical Examination Board, (NABTEB) came into existence in 1992. The decree No 70 of 1993 that established the board was promulgated and signed into law in 1993. The Board was charged among others with the responsibility to**:-**

1. Conduct entrance examination into Technical Colleges and allied institutions in Nigeria.
2. Take over the conduct of technical and business examination hitherto conducted by Royal Society of Arts of London (RSA) and City and Guild by West African Examination Council (WAEC).
3. Conduct Examination leading to the awards of the National Technical certificate (NTC), National Business Certificate (NBC), Advanced National Technical Certificate (ANTC) and Advanced National business Certificate (ANBC). NABTEB as a board conducts examination in the engineering trades, construction trades, miscellaneous trades, Business, General Education trade and trade related subjects.

There are six state Technical Colleges and one is federal Science and Technical College in Niger state. These technical colleges run various trade courses including furniture craft, Metalwork practice, Block laying and Concreting, Electrical Installation and Maintenance

Practice, painting and Decorating etc. Students admitted into these trade courses spend three (3) years in school for the award of National Technical Certificate (NTC) after completion of the course. Holders of this certificate are grouped under craftsmen cadre. A craftsman, who is confident of his ability, does not mind whether there is job opportunity or not because he can always engage himself. Therefore, Nigeria generally and Niger State in particular are in dare need of high quality craftsmen who can help our technicians and engineers carry out production, maintenance and repair services in their various trades.

A well trained craftsman should be capable of independent work; they should interpret technical drawing and perform all the calculations relating to his/her trade. The craftsman should also have sufficient knowledge of elementary science to understand the materials in which he works with. Therefore training in technical colleges in Niger state should be geared towards achieving the aims and objectives of the programme which include:-

1. To secure employment at the end of the programme as craftsmen.
2. Set up their own businesses and become self-employed and able to employ others.
3. Pursue further education in advanced craft technical programme or in tertiary technical institutions. In this respect, the Technical Colleges curricular for craftsmen should be designed to task the ingenuity of the students to be creative, capable of producing saleable goods and services to make the graduates become self reliant and in addition where the students are interested they could aspire to progress academically (FME, 2000).

Evaluation is the process of determining the nature and extent of those changes in learner's behavior after a programmed of curriculum and instruction (Tyler 1949). However, ultimate evaluation determines how well the individual performs in their place of employment after graduation (Okoro, 1993).Therefore it is essential to know how woodwork craftsmen produced by technical colleges in Niger state perform in their places of employment.

Statement of the Problem

It has been observed that there are unemployed craftsmen in Niger State while the products of technical Colleges by the aim and objectives of technical education should not cue for jobs but rather be self-employed and employer of labour. As a result of this ugly situation, the research aims at evaluation of woodwork craftsmen produced by technical colleges in Niger State.

Purpose of the Study

The main purpose of the study is to evaluate the woodwork craftsmen produced by technical colleges in Niger State Specifically, this study sought to:

1. Find out the level of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using woodworking machines.
2. Find out the level of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using consumable materials.
3. Determine the dexterity in the use of woodworking hand tools by woodwork craftsmen produced by Niger state technical colleges
4. Find out the level of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using maintenance equipment.

Research Questions

The following research questions were developed for the purpose of this study.

1. What are the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using woodworking machines?
2. What are the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using consumable materials?
3. Which of the woodworking hand tools effectively used by woodwork craftsmen produced by Niger state technical colleges?
4. What are the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using maintenance equipment?

Hypothesis

The following null hypotheses were formulated to guide the study and tested at 0.05 level of significance:

1. There is no significance difference between the mean responses of woodwork craftsmen and Head of woodwork sections in using woodworking machines.
2. There is no significance difference between the mean responses of woodwork craftsmen and Head of woodwork section in using woodworking hand tools.

Methodology

In carrying out this study, the descriptive survey approach was used. The study was conducted in Niger State. The target population for this study was made up of 137 Woodwork Craftsmen and 7 Heads of Woodwork section in technical colleges in Niger State. A Simple Random Sampling (SRS) was employed in the selection of Woodwork Craftsmen and Heads of

Woodwork section in technical colleges in Niger State giving the total of one hundred and twelve (112) respondents. The sample of the study is made up of one technical college in zone A, four technical colleges in zone B and two technical colleges in zone C of Niger State. The instrument used for data collection was a structured questionnaire developed by the researcher for this study. The instrument for the data collection was designed by the researcher and was validated by (3) Lecturers, two (2) from Industrial and Technology Education Department in Woodwork Technology option and the other from the department of Woodwork Technology, in Niger State College of Education Minna to ascertain the appropriateness of questionnaire items before administering it to respondents. The instrument for the study was administered to the respondents by the researcher through the help of one research assistant from each school which was later collected through the research assistant. The data were analyzed using mean and hypotheses were tested using t- test statistics. The mean was used to determine the degree of acceptance or rejection of questionnaire items, while t- test was used to test the hypotheses at 0.05 level of significance. The mean of 2.50 was used as decision point for every questionnaire item.

Results

Research Question I: What are the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using woodworking machines?

Table 1: Mean responses of the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using woodworking machines

N_1 = 7, N_2 = 105

S/NO	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_T$	REMARK
1.	Woodwork craftsmen use Drilling machine for boring hole on a wood surface accurately	3.00	2.23	2.62	Agreed
2.	Woodwork craftsmen use Bandsaw machine for making curve shapes on wood surface perfectly	2.14	2.36	2.25	Disagreed
3.	Woodwork craftsmen use Jigsaw machine for making curved shapes on wood surface accurately	2.57	2.45	2.51	Agreed
4.	Woodwork craftsmen use Circular saw machine for ripping wood perfectly	2.28	2.70	2.49	Disagreed
5.	Woodwork craftsmen use Thicknesser machine for reducing the size of a piece of wood accurately	2.57	2.34	2.46	Disagreed
6.	Wood work craftsmen used Mortising machine for making mortise joint on wood perfectly	1.71	2.20	1.96	Disagreed
7.	Woodwork craftsmen use Tenoning machine for making tenon joints on wood perfectly	1.86	2.19	2.03	Disagreed
8.	Woodwork craftsmen used Planning machine for	2.71	2.73	2.72	Agreed

	planning wood surfaces accurately				
9.	Woodwork craftsmen use Wood Lathe machine for cutting wood perfectly	1.43	2.29	1.86	Disagreed
10.	Woodwork craftsmen use Wood Lathe machine for sanding wood surfaces accurately	1.43	2.08	1.76	Disagreed
11.	Woodwork craftsmen use Jointer machine to produce a flat surface along board's length accurately	1.57	2.19	1.88	Disagreed
12.	Woodwork craftsmen use Panel saw machine for cutting plywood into cabinet components perfectly	2.43	2.43	2.43	Disagreed
13.	Woodwork craftsmen use Radial arm saw machine for cutting stock in to pieces accurately	1.71	2.23	1.97	Disagreed
14.	Woodwork craftsmen use bench grinder machine for grinding knives and cutters perfectly	2.00	2.35	2.18	Disagreed
15.	Woodwork craftsmen use Nail gun machine to drive nail into wood	1.71	2.40	2.06	Disagreed

Key: N_1 = Woodwork Head of sections, N_2 = Woodwork Craftsmen, $\bar{X}_1$ = Mean of response of Woodwork Head of sections, $\bar{X}_2$ = Mean of response of Woodwork Craftsmen, $\bar{X}_t$ = Average mean of responses of the levels of skilfulness of woodwork craftsmen produced by Niger state technical colleges in using woodworking machines.

The analysis of mean responses of the two groups of respondents from table 1 revealed that the item 1, 3 and 8 under this sub-heading are rated as agreed with mean score ranging between 1.76- 2.62 respectively. This signifies that the levels of skilfulness of woodwork craftsmen produced by Niger state technical colleges in using woodworking machines are appropriate.

Research Question II: What are the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using consumable materials?

Table 2: Mean responses of the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using consumable materials.

N_1 = 7, N_2 = 105

S/NO	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_T$	REMARK
1.	Woodwork craftsmen applies glue on wood surfaces to be joined very well	3.14	3.18	3.16	Agreed
2.	Woodwork craftsmen applies Sanding sealer on wood surface for finishing process perfectly	2.71	3.46	3.09	Agreed
3.	Woodwork craftsmen use Glass paper for smoothing wood surface perfectly	3.00	2.72	2.86	Agreed
4.	Woodwork craftsmen use formica to cover wood surface perfectly	2.71	2.03	2.37	Disagreed
5.	Woodwork craftsmen fixes Hinges to door and cabinets perfectly	3.29	3.54	3.42	Agreed

6.	Woodwork craftsmen Nails wood during rafter construction perfectly	2.86	3.26	3.06	Agreed
7.	Woodwork craftsmen uses furniture materials perfectly	3.00	2.38	2.69	Agreed
8.	Woodwork craftsmen select the right type of fabric material for upholstery work perfectly	3.00	2.37	2.69	Agreed

Key: N_1 = Woodwork Head of sections, N_2 = Woodwork Craftsmen, $\bar{X}_1$ = Mean of response of Woodwork Head of sections, $\bar{X}_2$ = Mean of response of Woodwork Craftsmen, $\bar{X}_t$ = Average mean of responses of the levels of skilfulness of woodwork craftsmen produced by Niger state technical colleges in using consumable materials.

The analysis of mean responses of the two groups of respondents from table 2 revealed that the items under this sub-heading are rated as agreed with mean score ranging between 2.69-3.09 respectively. This signifies that the levels of skilfulness of woodwork craftsmen produced by Niger state technical colleges in using woodworking machines are appropriate.

Research Question III: Which of the woodworking hand tools are effectively used by woodwork craftsmen produced by Niger state technical colleges?

Table 3: Mean responses of the woodworking hand tools effectively used by woodwork craftsmen produced by Niger state technical colleges.

N_1 = 7, N_2 = 105

S/NO	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_t$	REMARK
1.	Hammer	4.00	3.86	3.93	Agreed
2.	Screw drivers	2.71	2.63	2.67	Agreed
3.	Hand planner	3.29	3.38	3.34	Agreed
4.	Jig saw	3.29	3.86	3.58	Agreed
5.	Scraper	3.00	2.00	2.50	Agreed
6.	Pincer	3.43	2.72	3.08	Agreed
7.	Pliers	2.57	2.31	2.44	Agreed
8.	Spanner	2.43	2.40	2.42	Agreed
9.	Jack saw	3.43	3.67	3.55	Agreed
10.	Steel square	3.57	2.60	3.09	Agreed
11.	Cutter	3.29	2.12	2.71	Agreed
12.	Scissors	3.43	2.33	2.88	Agreed
13.	Punch	3.00	2.11	2.56	Agreed
14.	File	3.29	2.39	2.84	Agreed
15.	Hand planes	3.71	3.41	3.56	Agreed
16.	Hand saws	3.71	3.86	3.79	Agreed

Key: N_1 = Woodwork Head of sections, N_2 = Woodwork Craftsmen, $\bar{X}_1$ = Mean of response of Woodwork Head of sections, $\bar{X}_2$ = Mean of response of Woodwork Craftsmen, $\bar{X}_t$ = Average mean of responses of the woodworking hand tools are effectively used by woodwork craftsmen produced by Niger state technical colleges.

The analysis of mean responses of the two groups of respondents from table 3 revealed that the items under this sub-heading are rated as agreed with mean score ranging between 2.44-3.93 respectively. This signifies that the woodworking hands tools are effectively used by woodwork craftsmen produced by Niger state technical colleges are appropriate.

Research Question IV: What are the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using maintenance equipment?

Table 4: Mean responses of the levels of skillfulness of woodwork craftsmen produced by Niger state technical colleges in using maintenance equipment.

N_1 = 7, N_2 = 105

S/NO	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_T$	REMARK
1.	Woodwork craftsmen lubricate cutting blades using Oil Can very well	2.29	2.56	2.43	Disagreed
2.	Woodwork craftsmen grease chains and sprockets with grease gun perfectly	2.00	2.55	2.28	Disagreed
3.	Woodwork craftsmen tighten all loose nuts and bolts with spanner correctly	2.14	2.47	2.31	Disagreed
4.	Woodwork craftsmen covered exposed wires with insulation tapes perfectly	2.00	2.52	2.26	Disagreed
5.	Woodwork craftsmen remove sawdust inside the upper and lower wheel of band saw with brush very well	2.43	2.77	2.60	Agreed
6.	Woodwork craftsmen sharpen bits of the electrical hand drill with scrapper perfectly	2.29	2.30	2.30	Disagreed
7	Woodwork craftsmen removed all chips from Thicknessing machine with brush perfectly	2.00	2.26	2.13	Disagreed
8	Woodwork craftsmen lubricate the shaft of a jointer that carries the fence for easy movement with grease very well	2.14	2.66	2.40	Disagreed
9	Woodwork craftsmen lubricate all the nipples of a band saw machine with grease gun perfectly	1.71	2.33	2.02	Disagreed

Key: N_1 = Woodwork Head of sections, N_2 = Woodwork Craftsmen, $\bar{X}_1$ = Mean of response of Woodwork Head of sections, $\bar{X}_2$ = Mean of response of Woodwork Craftsmen, $\bar{X}_t$ = Average mean of responses of the levels of skilfulness of woodwork craftsmen produced by Niger state technical colleges in using maintenance equipment.

The analysis of mean responses of the two groups of respondents from table 4 revealed that the item 5 under this sub-heading is rated as agreed with mean score ranging between 2.44-3.93 respectively. This signifies that the levels of skilfulness of woodwork craftsmen produced by Niger state technical colleges in using maintenance equipment are appropriate.

Hypothesis I

HO_1: There is no statistical significance difference between the mean responses of respondents on the levels of skilfulness of woodwork craftsmen and Head of sections in using woodworking machines.

The result of the test of significance difference in mean responses of respondents on the levels of skilfulness of woodwork craftsmen and Head of sections in using woodworking machines is presented in Table 5.

Table 5: T– test statistical Analysis of the levels of skilfulness of woodwork craftsmen and Head of sections in using woodworking machines.

$N_1 = 7$, $N_2 = 105$

S/NO	ITEMS	SD_1	SD_2	t- cal	REMARK
1.	Woodwork craftsmen use Drilling machine for boring hole on a wood surface accurately	1.07	0.39	1.90	S
2.	Woodwork craftsmen use Bandsaw machine for making curve shapes on wood surface perfectly	1.12	0.98	- 0.42	NS
3.	Woodwork craftsmen use Jigsaw machine for making curved shapes on wood surface accurately	1.40	1.17	0.19	NS
4.	Woodwork craftsmen use Circular saw machine for ripping wood perfectly	0.88	1.10	- 0.19	NS
5.	Woodwork craftsmen use Thicknesser machine for reducing the size of a piece of wood accurately	0.50	1.13	0.77	NS
6.	Wood work craftsmen used Mortising machine for making mortise joint on wood perfectly	0.88	1.20	-1.09	NS
7.	Woodwork craftsmen use Tenoning machine for making tenon joints on wood perfectly	0.99	1.13	- 0.69	NS
8.	Woodwork craftsmen used Planning machine for planning wood surfaces accurately	0.70	1.15	- 0.05	NS
9.	Woodwork craftsmen use Wood Lathe machine for cutting wood perfectly	1.05	1.12	- 1.69	NS
10.	Woodwork craftsmen use Wood Lathe machine for sanding wood surfaces accurately	0.49	1.03	- 2.24	S
11.	Woodwork craftsmen use Jointer machine to produce a flat surface along board's length accurately	0.73	1.17	- 1.59	NS
12.	Woodwork craftsmen use Panel saw machine for cutting plywood into cabinet	0.90	1.04	0.00	NS

	components perfectly				
13.	Woodwork craftsmen use Radial arm saw machine for cutting stock in to pieces accurately	0.88	1.07	- 1.18	NS
14.	Woodwork craftsmen use bench grinder machine for grinding knives and cutters perfectly	1.20	1.06	- 0.63	NS
15.	Woodwork craftsmen use Nail gun machine to drive nail into wood	0.88	1.05	- 1.57	NS

Key: N_1 = Woodwork Head of sections, N_2 = Woodwork Craftsmen, SD_1 = Standard Deviation Mean of response of Woodwork Head of sections, SD_2= Standard Deviation Mean of response of Woodwork Craftsmen, S= Significant, NS= Not significant, t-cal= t calculated

Table 5: revealed that the t –test accept the null hypothesis only at items 2, 3, 4, 5, 7, 9, 11,12,13,14 and 15 respectively at 0.05 level of significance. Meaning that there is no statistical significance difference between the mean responses of respondents on the levels of skilfulness of the woodwork craftsmen and Head of section in using woodworking machines.

Hypothesis II

HO_2: There is no statistical significance difference between the mean responses of the level of skilfulness of the woodwork craftsmen and Head of woodwork section in using woodworking hand tools.

Table 6: T– test statistical Analysis of the levels of skilfulness woodwork craftsmen and Head of woodwork section in using woodworking hand tools.

N_1 = 7, N_2 = 105

S/NO	ITEMS	SD_1	SD_2	t- cal	REMARK
1.	Hammer	0.00	0.35	4.67	S
2.	Screw drivers	0.70	1.19	0.21	NS
3.	Hand planner	1.03	0.81	- 2.32	S
4.	Jig saw	0.45	0.35	- 7.85	S
5.	Scraper	0.64	1.03	2.94	S
6.	Pincer	0.49	1.15	2.37	S
7.	Pliers	0.73	1.03	0.68	NS
8.	Spanner	0.73	0.98	0.08	NS
9.	Jack saw	1.05	0.47	- 0.55	NS
10.	Steel square	0.49	1.11	3.34	S
11.	Cutter	0.45	0.98	4.33	S
12.	Scissors	0.49	0.93	3.93	S
13.	Punch	0.53	0.79	3.18	S
14.	File	0.45	0.73	3.75	S
15.	Hand planes	0.45	0.81	1.20	NS

16.	Hand saws	0.45	0.35	-0.75	NS

Key: N_1 = Woodwork Head of sections, N_2 = Woodwork Craftsmen, SD_1 = Standard Deviation Mean of response of Woodwork Head of sections, SD_2 = Standard Deviation Mean of response of Woodwork Craftsmen, S= Significant, NS= Not significant, t- cal= t calculated

Table 6: revealed that the t –test accept the null hypothesis only at items 2, 7, 8, 9, 15 and 16 respectively at 0.05 level of significance. Meaning that there is no statistical significance difference between the mean responses of respondents on the levels of skilfulness of the woodwork craftsmen and Head of section in using woodworking hand tools.

Discussion of Findings

The discussion of findings is based on the research questions posed for the study by the hypothesis.

The findings of the study indicated that Woodwork craftsmen used drilling machine for boring hole on a wood surface inaccurately because they fail to use the tip of the pilot pin to determine the center of the hole to be drilled, turn the arms to start drilling and apply only a slight and regular pressure when the hole cutter touch the wood; the drilling performance does not improve by putting more pressure on the tool. Too much pressure will overload the motor and the hole cutter will be worn sooner. They also fail to wear protective clothing's like the nose mask, safety goggles, and ear muffs, among others. This is considered an ignorantly risk behavior on the path of the craftsmen and it tends to undermine safety measures that might have put in place towards ensuring and promoting health safety in the workshop. The safety lives of personnel and the safeguarding of school workshop property from damage cannot be guaranteed in an atmosphere of high disregard for occupational health and safety standards and regulations (OSH, 2005).

On planning machines for planning wood surfaces, the findings of the study indicated that the Woodwork craftsmen used the planner accurately because grain considerations is put in place when planning wood along its side grain which result in thin shavings rising above the surface of the wood as the edge of the plane iron is pushed forward, leaving a smooth surface. This is largely a matter of cutting with the grain or against the grain respectively, referring to the side grain of the piece of wood being worked. The grain direction can be determined by looking at the edge or side of the work piece. Wood fibers can be seen running out to the surface that is being planned. Woods, the grain runs in many directions and therefore working against the grain is inevitable. In this case, a very sharp and finely-set blade is required. When planning

against the grain, the wood fibers are lifted by the plane iron, resulting in a jagged finish, called tear out. Planning against the grain in this manner is sometimes called "traverse" or "transverse" planning. Planning the end grain of the board involves different techniques, and frequently different planes designed for working end grain. Planes with the iron bedded at a "low angle," typically about 12 degrees, are often used for planning end grain.

The findings also indicated that wooden lathes are used to turn pieces of wood for carving bowls, spindles and furniture legs. After the wood has been carved on the lathe, it should be rough and finish sanded. Sanding on wood lathe is similar to the idea of a belt sander, but instead the wood moves and the sanding surface is stationary. If proper safety precautions are taken, sanding on a lathe is a breeze. Put on your safety glasses and dust mask. You may also wish to wear a pair of work gloves. Remove the tool rest from the lathe. Slide the piece of wood onto the lathe and clamp it down tightly. Turn on the lathe at a slow speed to start spinning the piece of wood. Fold the sandpaper into thirds and place a piece of steel wool between the sandpaper and your hands. This trick not only helps you to hold the sandpaper, but it also protects your fingers from the friction of sanding on a lathe. Use the piece of sandpaper to begin sanding at one end. If you are left-handed, start at the right end and vice versa. This makes it easier to work from one end of the piece to the other. Slightly touch the sandpaper to the area you wish to smooth. Keep the sandpaper still while the piece of wood turns and smooth's away any rough edges. Sand the entire piece, slowly moving the sandpaper from one end to the other. Turn off the lathe, if you wish, to check your progress. Continue until you have completely sanded the entire project. Finish the piece with stain or polyurethane as desired.

The findings also indicated that the Woodwork craftsmen used hammer to deliver an impact to an object driving nails, fitting parts and breaking up objects. Hammer is a basic tool that is used by the craftsmen and often designed for a specific purpose, and varies widely in their shape and structure. The usual features are handle and head, with most of the weight in the head. The basic design is hand-operated, but there are also many mechanically operated models for heavier uses, such as steam hammers.

A hand plane is a tool for shaping wood. When powered by electricity, the tool may be called a planer. Planes are used to flatten, reduce the thickness of, and impart a smooth surface to a rough piece of lumber or timber. Planning is used to produce horizontal, vertical, or inclined flat surfaces on work pieces usually too large for shaping. Special types of planes are designed to cut joints or decorative mouldings. Hand planes are generally the combination of

a cutting edge, such as a sharpened metal plate, attached to a firm body, that when moved over a wood surface, take up relatively uniform shavings, by nature of the body riding on the 'high spots' in the wood, and also by providing a relatively constant angle to the cutting edge, render the planed surface very smooth. A cutter which extends below the bottom surface, or sole, of the plane slices off shavings of wood. A large, flat sole on a plane guides the cutter to remove only the highest parts of an imperfect surface, until, after several passes; the surface is flat and smooth.

The findings of the research also indicated that a pincer is a hand tool used in many situations where a mechanical advantage is required to pinch, cut or pull an object. Pincers are first-class levers, but differ from pliers in that the concentration of force is either to a point, or to an edge perpendicular to the length of the tool. This allows pincers to be brought close to a surface, as is often required when working with nails. Carpenter's pincers are particularly suited to these tasks. Pincer is primarily used for removing objects out of a material that they have been previously applied to.

The steel square is a tool that carpenters use. They use many tools to lay out a "square" or right-angle, many of which are made of steel, but the title steel square refers to a specific long-armed square that has additional uses for measurement, especially of angles, as well as simple right-angles. Today the steel square is more commonly referred to as the framing square. It consists of a long arm and a shorter one, which meet at an angle of 90 degrees (a right angle). The steel square has many uses, including laying out common rafters, hip rafters and stairs. It has a diagonal scale, board foot scale and an octagonal scale. On the newer framing squares there are degree conversions for different pitches and fractional equivalents. Cave (1986) described skill as the acquisition of knowledge such as ability, techniques or learning experience which leads to doing and making or performing things.

The research findings also indicated that hand saws are used to cut pieces of wood into different shapes. This is usually done in order to join the pieces together and create a wooden object. They usually operate by having a series of sharp points of some substance that is harder than the wood being cut (Michael 1996), Saws can also be considered 'pull cut' or 'push cut'.

Conclusion

In conclusion, the study on the evaluation of woodwork craftsmen produced by Technical Colleges in Niger State plays a vital role to discover, that most of the Technical colleges in

Niger State lacks machines and tools in woodwork workshops which lead to low skilled acquisition.

Recommendations

1. The Federal and State Government should partake in the effort to improve the teaching of woodwork in Technical Colleges.
2. The Federal and State Government should make adequate provisions of tools and machine in Technical Colleges.
3. The Niger State Government should Involve Companies in the state that would contribute skill acquisition by students in Technical Colleges.

Reference

Aina. (1991). *Technical and vocational teacher training as a strategy for technical development of Nigeria*. Technical Education Journal P.128.

Aina, 0. (2000). Nigeria technical and vocational education in the near future in Aina, O. (ed) Technical and Vocational Education in Nigeria: *Vision and Action. Abuja, Nigeria Seminar Proceedings.* 1(1) 34-38.

Cave, J. (1986). Technology in School; A Handbook of Practical Approches. London ; Longman.

Eze, T. I. (1989). Policy constraints to the growth of Technology Education programs. Journal of Technical Education Review, 2(2) 13–19.

Eze, T. I. (1990). Policy constraints to the growth of technology education. The Nigeria Teacher: A Journal of Teacher Education. 1(2) 2-6.

Federal Ministry of Education (2000). Statistics in students' enrollment in Technical Colleges, Colleges of Education,Monotechnics and Polytechnics. Abuja: FME.

Federal Republic of Nigeria, (1981). National policy on education Revised Lagos.Federal Government Press.

Mohammed U. T. (1986). Rationale of Planning Vocational and Technical Education for Nigeria Youths. Unisok: Journal of Education 1(1) 15

NAFDAC (1994) Procedural manual for (FPDIC). Lagos. Food drug and poison information centre. Passim.

National Board for Technical Education, (2000). Digest of statistics on technical education, Abuja (NBTE).

Nworgu B. G. (1981). Education Research: Basic issues and Methodology, Ibadan,Wisdom Publisher.

Nworgu, B .G. Edit (1992) "*Educational Measurement and Evaluation*". Nsukka , Hallman publishers (passim)

Nzelum, V. N. (1993). Problems and Constraints in Vocational and Technical Teacher Education. Nigeria Vocational Association.

Oranu, R.N. (1991). Vocational Education and Manpower Development. A paper presented at the 6th annual conference of Nigeria Vocational association held at

Federal College of Education (Technical) Umunze. September 1(1)17-19

Osemekian E.R. (1997) Emerging Issue and Problem of Vocational and Technical Education. Journal of vocational/ Technical education and Self reliance. (2) 42-49.

Sariki, G.A. (1994). Pre –Service skills Needs for Increasing Employability of Technical College Graduate. Unpuplisshed Ph.D thesis, Department of Vocational Teacher Education University of Nigeria, Nsukka.

Tyler, R. (1949). Basic Principles of Curriculum and Instruction. Chicago: University of Chicago.

Umeano ,E.C. (1999) " A first course in Educational Psychology made brief ." Enugu :Magnet Business Enterprises .passim

World Bank, (1991). Vocational Technical Education and Training, Washington D.C; World Bank.