



## **Availability And Utilization Of Resources For Skill Acquisition In Carpentry and Joinery Trade in Technical Colleges in North-East, Nigeria**

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### **ABSTRACT**

This study was conducted to determine the availability and utilization of resources for skill acquisition in carpentry and joinery trade in Technical Colleges in North-East Nigeria. To elicit the responses from the respondents five research purposes of the study in line with nine research questions and five research hypotheses were formulated to guide the study. Descriptive survey research design was adopted for the study. The population of this study was comprised of 850 respondents, this comprises of all the 19 principals, 46 carpentry and joinery teachers, 41 technicians and 744 NTC III carpentry and joinery trade students across the 19 technical colleges in North-east Nigeria. The Stratified proportional random sampling technique was adopted to select 11 principals, 25 teachers, 22 technicians, and 348 NTC III carpentry and joinery trade students of 2021/2022 academic session from Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe states respectively. The instrument for data collection for this study was checklist and a five - point likert scale questionnaires drawn from National Board for Technical Education (NBTE) minimum standard. The instrument used to collect data for this study was validated by three experts. Cronbach Alpha was used to determine the reliability of the instrument used in this study, the data for this study were collected by the researcher with the help of two trained research assistants. The data collected for this study was analysed using simple percentage, mean and standard deviation, t-test was used for testing the formulated hypotheses at 0.05 level of significance. The findings of the study among others revealed that qualified carpentry and joinery teachers and technicians were not available for the teaching of carpentry and joinery trade, for skill acquisition in North-East technical colleges. Finally, the findings of the study revealed that, there were no significant difference in the mean responses of teachers and students in the utilization of hand tools, machine tools and equipment in the North-East technical colleges. It was recommended that, government should always provide fund for procurement of carpentry and joinery trade resources in the North-East technical colleges.

Keywords:

### **INTRODUCTION**

Carpentry and joinery trade is one of the technical and vocational education programme which according to the curriculum of the programme National Board for Technical Education, (NBTE, 2007), provides training that leads to the production of skilled personnel like craftsmen/ craftwomen and technicians who could either secure employment at the end of their training set up their own businesses, or further their studies in Polytechnics, Colleges of Education (Technical) and Universities. The curriculum of the carpentry and joinery trade programme covers a period of three years.

All the skills in carpentry and joinery trade require the use of practical teaching. That is why the National Policy on Education, (FRN,2014), asserted that the approach to instruction is both class teaching and practical work. Practical teaching according to Omosewo, (2010) develops in students,

appreciation of the spirit and method of problem solving. Andural and Ikyumen (2015), added that today a lot of emphasis is being on practical teaching which prepares recipients for various occupations that is why the NBTE (2012), standards and criteria for accrediting programme in technical colleges, recognizing the importance of practical teaching, recommended that the classes for workshop practical work shall be 15-20 students and the teacher-student ratio shall be kept at 1:20. Physical facilities play vital roles in students learning, for without them according to Omosowo, (2010) practical work is very difficult to organize. That is why Yaduma and Moses (2016), stressed that for Technical and Vocational Education (TVE), to achieve its objectives, equipment, materials and tools (workshop facilities) must be available and adequate. Akinfolarin (2012), observed that Nigeria is facing a serious problem of how to finance her educational programmes.

Resources for teaching and learning in technical colleges can be broadly divided into three, namely; Human resources, Infrastructures resources and Equipment resources. The organizational set-up in Technical Colleges should have adequate number of qualified teaching staff for technical courses. At least one technical teacher per every fifteen or twenty students in the workshop that is according to (NBTE, 2013), the following teacher to student ratio is recommended: for a practical oriented trade course like carpentry and joinery trade the ideal ratio is 1:15 and 1:20 as the upper limit. The number of teachers varies according to trade and workload, which is for a trade section that can offer four different craft modules, each module requiring twenty hours of workshop practice weekly will require four instructors/teachers (NBTE, 2012). Thus, the teacher is the first and foremost to think of when discussing issues relating to skill acquisition at Technical Colleges and any other conventional educational institutions for that matter.

Survey by National Educational Research and Development Council, NERDC (2004), indicated a shortfall of 88% in the area of staffing of Technical Colleges. However, such categories of workers are also in high demand in the labour market, but could be suitably motivated for part time instruction in technical colleges Johnson and Adams, (2004). Udofor (2010), lamented that insufficient qualified science and technical teachers in schools have often resulted in the employment of unqualified staff and this demotivates the students through bad teaching. Aina (2011), states that the quality and quantity of teachers in the schools have contributed immensely to the high failure rates being experienced in the programmes run by National Business and Technical Examination Board (NABTEB) Certificate Examination. Oranu, (2009) cited in Haruna, (2010). However, Technical Education is that aspect of education which leads to the acquisition of practical skills, as well as basic scientific knowledge. According to the Federal Republic of Nigeria (FRN, 2014), National Policy On Education, basic and scientific knowledge and attitudes required as craftsmen and technicians at sub-professional level in order to achieve the goals of technical education, which are to:

1. Provide trained manpower in the applied sciences, technology and business, particularly at craft, advance craft and technical levels.
2. Provide the technical knowledge and vocational skills necessary for agricultural, commercial and economic development.
3. Give training and impart the necessary skills to individuals who shall be self-reliant economically (FRN, 2014).

#### **Statement of the Problem**

Resources are very necessary for the utmost realization of the goals of education. In this era of accelerated technological development, modern instructional facilities and equipments are not only important; but are expected to be available in a functional condition and properly utilized. Chakamba (2013), found that, training in technical colleges for quality skills acquisition requires appropriate training equipments and tools, adequate supply of training tools and equipments and lack of instructional materials are some of the factors that reduce the effectiveness of skill acquisition. Despite this signal, such categories of competent technical personnel and teachers, infrastructures and equipments that are in high demand in the technical colleges are not easily found in the school settings.

However, it is particularly worrisome to note that technical colleges seem to be fast declining, especially in the area of resources required for the skill acquisition processes. One of the major problems facing technical college students is that most of the technical teachers are either inadequate or incompetent and the training equipment and tools provided in some schools apart from being grossly inadequate are obsolete and worn out, Udofia (2012). This situation rather than reduce

unemployment and poverty. It rather increase the rate of unemployment in North-east Nigeria due to lack of saleable skills. It is against this background that this study would attempt to evaluate the availability and utilization of resources for skills acquisition in carpentry and joinery trade in technical colleges in North-east Nigeria.

#### **Objectives of the Study**

1. Availability of human resources for the teaching and learning of carpentry and joinery trade, for skill acquisition in North-east technical colleges.
2. The extent of utilization of hand tools, machine tools and equipment for the teaching and learning of carpentry and joinery trade, for skill acquisition in North-east technical colleges.

#### **Research Questions**

1. What is the extent of the availability of human resources for the teaching and learning of carpentry and joinery trade, for skill acquisition in North-east technical colleges?
2. What is the extent of utilization of hand tools, machine tools and equipment for the teaching and learning of carpentry and joinery trade, for skill acquisition in the North-east technical colleges.

#### **Hypotheses**

Ho1: There is no significant difference in the mean responses of Principals and teachers on the availability of human resources in the North-East technical colleges.

Ho2: There is no significant difference in the mean responses of technicians and students in the utilization of hand tools, machine tools and equipment in the North-east technical colleges.

#### **METHODOLOGY**

The study was descriptive survey research design. Since the study involved collection of ideas, responses and opinions of respondents hence survey research was used. According to Akuezuilu (2003), a survey research design is found appropriate in a study that involves the assessment of responses and people opinion. Similarly, Uzoagulu (2011), was of the view that, a survey research is a type of descriptive research in which data are usually collected, organized and described as they exist without interfering with the data.

##### **Area of the Study**

The study was carried out in North-East geo-political region of Nigeria which comprises of six (6) states namely; Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe states respectively. The region lies between longitudes 17° 22" and 20° 32" North and latitudes 6° 26" and 7° 12" East, on the globe and covers an area of 103, 6392 km (Yaduma, and Moses, 2016). The region is bordered by Kano, Jigawa, Plateau, and Benue states within Nigeria, it shares international boundaries with Republic of Cameroun, Chad and Niger.

##### **Population of the Study**

The total target population of the study was made up of 850 respondents, these comprises of all the 19 Principals, 46 carpentry and joinery teachers, 41 technicians and 744 NTC III carpentry and joinery trade students in the 2021/2022 academic session across the 19 technical colleges in North-East Nigeria.

##### **Sample and Sampling Techniques**

The sample for this study was drawn using the Stratified proportional random sampling technique, the strata comprised all the states in the North-East, namely: Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe States, 10% Strata proportion at each states was used to obtain the sampled population. The 10% Strata proportion was chosen to satisfy the descriptive survey research design, as one in which a group of people is studied by collecting and analyzing data from a few people considered to be representatives of the entire population.

**Breakdown of the sample population**

States	Adamawa State	Bauchi State	Borno State	Gombe State	Taraba State	Yobe State	Total
Technical Colleges	4	2	3	2	7	1	19
10% of Technical Colleges Principals	2	1	2	1	4	1	11
Teachers	6	3	4	3	8	1	25
Technicians	5	2	3	2	9	1	22
Students	53	43	51	45	137	19	348
<b>Total</b>	<b>66</b>	<b>49</b>	<b>60</b>	<b>51</b>	<b>158</b>	<b>22</b>	<b>406</b>

**Source: Field work (2022)**

**Instrument for Data Collection**

The instrument for data collection for this study was a checklist and a Five - Point Likert Scale Questionnaire drawn from NBTE minimum standard. The Checklist Named “Checklist Instrument for Evaluating the Availability and Utilization of Resources for Skills Acquisition in Teaching Carpentry and Joinery Trade at National Technical Certificate (NTC) Level in North-East Technical Colleges”. The researcher constructed the checklist using the NBTE minimum standard for the study.

**Validations of the Instrument**

The validation of the instrument for this study was established through face and content validation. Three experts validated both face and content of the instrument, two from Department of Vocational and Technology Education (DVTE) Abubakar Tafawa Balewa University Bauchi, and one from the Department of Woodwork Technology Education, Federal College of Education (Technical) Potiskum, Yobe State. All the suggestions of the valuator was carefully considered and used in the adoption of the instrument.

**Reliability of the Instrument**

Reliability of a test instrument according to Uzoagulu (2011), is the consistency of the test in measuring whatever it is designed to measure. It is the extent to which an instrument is accurate, consistent and trustworthy after it has been administered with the same result for a particular individual or group. The Cronbach Alpha reliability techniques which was referred to as coefficient alpha was used to establish the reliability format. Cronbach Alpha technique was applied to an instrument with multiple items, Uzoagulu (2011). The Cronbach Alpha is used when a different number of points are assigned to different options of each test items.

Onunkwo (2002), stated that Cronbach Alpha is used to determine the reliability of multiple score tests like interest, opinions, attitude and personality. The validated instrument was pilot-tested on NTC II carpentry and joinery trade students in Government Technical College Hadejia, Jigawa State, which was out of the study area. A Cronbach Alpha formula was used to obtain the reliability coefficient of 0.95. Thus, Cronbach Alpha formula is:-

$$\alpha = \frac{k}{k-1} \frac{(1 - \sum s^2)}{s^2}$$

$\alpha$  = Cronbach Alpha Coefficient

$k$  = the total number of the items in the test.

$\sum s^2$  = Summary of variance scores obtained from the respondents of the items.

$S^2$  = Variance of the total scores of the items, cited in (Uzoagulu, 2012).

**Method of Data Collection**

The data for this study was collected by the researcher with the help of six trained research assistants using the course specification manual obtained from NBTE. The checklist instrument was in three (3) appendices; a checklist instrument completed by Principals and Technicians using inventory record,

An interval of two days was allowed for the respondents to complete the checklist after the researcher and the six research assistants went round and retrieved the completed instrument.

**Method of Data Analysis**

Data collected was analyzed using Simple Percentage, Mean and Standard Deviation and t-test, was use to test the hypotheses at 0.05 level of significance.

Rating point for Research Question five

Responses	Symbol	Numerical Value	Real Limit
Highly utilized	HU	5	4.50-5.49
Utilized	U	4	3.50-4.49
No idea	NI	3	2.50-3.49
Fairly utilized	FU	2	1.50-2.49
Not utilized	NU	1	0.05-1.49

Source: Field work (2022)

**RESULT AND DISCUSSIONS**

**Research Question 1**

*To what extent are Human Resources available for teaching carpentry and joinery trade, for skill acquisition in North-East technical colleges?*

**Table 1: Percentage Responses of Principals and Technicians on the availability of human resources for the teaching of carpentry and joinery trade, for skill acquisition in North-East technical colleges**

S/N	Items	NBTE MIN. STD	N <sub>P=11</sub> A <sub>1</sub>	%	NA <sub>1</sub>	%	N <sub>T=22</sub> A <sub>2</sub>	%	NA <sub>2</sub>	%	A <sub>G</sub> %	NA <sub>G</sub> %	Remark
1	Qualified Carpentry and Joinery teachers	2	6	54.5	5	44.5	10	45.5	12	54.5	53.4	46.6	A
2	Qualified Carpentry and Joinery technicians	3	7	63.6	4	35.4	5	22.7	17	77.3	36.3	63.7	NA
3	Workshop attendants	1	5	44.5	6	54.5	7	31.8	15	68.2	36.0	64.0	NA

Source: Field work (2022)

- KEY:**
- A<sub>1</sub> = Available Responses of Principals
  - NA<sub>1</sub> = Not Available Responses of Principals
  - A<sub>2</sub> = Available Responses of Technicians
  - NA<sub>2</sub> = Not Available Responses of Technicians
  - A<sub>G</sub>% = Available Grand Percentage
  - NA<sub>G</sub>% = Not Available Grand Percentage
  - N<sub>p</sub> = Number of Principals
  - N<sub>T</sub> = Number of Technicians
  - A = Available
  - NA = Not Available

Reported in Table 1 was the results of the principals and technicians responses on the availability of human resources for the teaching and learning of carpentry and joinery trade, for skill acquisition in North-East technical colleges. The results showed that only one out of the three listed items scored above 50 percent. This indicates that only one item was available in the schools. The remaining two items scored less than 50 percent indicating that they were not available. Therefore, it was qualified carpentry and joinery teachers as human resources for the teaching of carpentry and joinery trade, for skill acquisition in North-East technical colleges that were available.

**Research question 2** *What is the extent of utilization of hand tools, machine tools and equipment for the teaching of carpentry and joinery trade , for skill acquisition in the North-east technical colleges?*

**Table 2: Mean Ratings of Teachers and Students on the extent of utilization of hand tools, machine tools and equipment for the teaching carpentry and joinery trade, for skill acquisition in the North-East technical colleges**

S/N.	Description of items	$N_t = 25$		$N_s = 348$		$\bar{X}_G$	$SD_G$	Remark
		$X_1$	$SD_1$	$X_2$	$SD_2$			
1.	Smooth planes	3.68	1.34	4.19	0.94	4.15	0.96	HU
2.	Jack planes	2.42	1.33	3.84	1.04	3.74	1.05	HU
3.	Wooden planes	3.00	1.29	4.17	0.99	4.09	1.01	HU
4.	Rebate plane	3.36	1.65	1.86	1.34	1.16	1.36	NU
5.	Plough plane	2.44	1.42	2.61	1.16	2.57	1.17	NU
6.	Spoke shave	3.56	1.42	3.67	1.31	3.66	1.31	HU
7.	Ripping saw	3.04	1.24	2.59	1.53	3.62	1.30	HU
8.	Crosscut saw	3.28	1.33	3.49	1.50	3.49	1.48	MU
9.	Tenon saw	3.40	1.50	2.73	1.44	2.77	1.44	NU
10.	Compass saw	2.60	1.50	3.11	1.64	3.07	1.63	MU
11.	Nest of screw	3.68	1.60	2.68	1.55	2.75	1.55	NU
12.	Try-square	2.88	1.05	3.38	1.48	3.35	1.48	MU
13.	Builders square	2.84	1.43	2.94	1.63	2.93	1.62	NU
14.	Claw hammer	3.72	1.34	2.39	1.49	2.48	1.48	NU
15.	Ball pein hammer	2.96	1.34	2.68	1.24	2.70	1.25	NU
16.	Warrington hammer	3.64	1.35	3.51	1.56	3.52	1.55	HU
17.	Rasp file	2.92	1.19	2.74	1.32	2.75	1.31	NU
18.	Triangular file	3.32	1.52	2.39	1.50	2.45	1.50	NU
19.	Flat file	3.00	1.47	2.94	1.63	2.94	1.62	NU
20.	Chisels	2.72	1.34	2.50	1.35	2.51	1.35	NU
21.	Oil stone	3.68	1.35	3.06	1.63	3.10	1.61	MU
22.	Oil can	3.40	1.22	3.46	1.60	3.46	1.57	MU
23.	Round file	2.28	1.34	2.62	1.64	2.60	1.62	NU
24.	Gimlet	2.88	1.13	2.54	1.36	2.56	1.34	NU
25.	Scriber	3.72	1.34	2.53	1.53	2.61	1.52	NU
26.	Marking gauge	3.52	1.56	3.80	1.26	3.55	1.28	HU
27.	Carving and sculpture chisel	3.04	1.27	2.76	1.57	2.78	1.55	NU
28.	Wood lathe chisel	3.76	1.51	2.89	1.49	2.95	1.49	NU
29.	Auger brace	3.68	1.49	3.95	1.14	3.93	1.63	HU
30.	Spraying cup	2.16	1.28	3.72	1.21	3.62	1.21	HU
31.	g-cramp	3.16	1.43	2.36	1.37	2.41	1.37	NU
32.	f-cramp	3.48	1.12	3.80	1.17	3.78	1.17	HU
33.	Pincers	2.48	1.48	3.08	1.70	3.04	1.69	MU
34.	Marking knife	4.20	1.22	2.47	1.47	2.59	1.45	NU
35.	Goggles	1.72	1.10	2.59	1.27	2.53	1.17	NU
36.	Fret saw	3.72	1.34	3.71	1.37	3.71	1.37	HU
37.	Sash cramp	3.04	1.40	2.70	1.65	2.73	1.63	NU
38.	Hacksaw frames	3.20	1.41	3.86	1.23	3.82	1.24	HU
39.	Bow saw	3.08	1.55	2.93	1.78	2.94	1.76	NU
40.	Allen key	3.64	1.35	3.68	1.29	3.69	1.29	HU
41.	Wrench	2.48	1.29	3.25	1.73	3.20	1.70	MU
42.	Spanner	2.96	1.33	3.20	1.22	3.18	1.23	MU
43.	Sliding bevells	3.56	1.38	3.63	1.36	3.63	1.36	HU
44.	Hand drill	3.64	1.58	3.05	1.71	3.09	1.70	MU
45.	Putty knife	3.44	1.26	2.35	1.37	2.42	1.36	NU
46.	Auger bits	3.24	1.45	3.82	1.09	3.78	1.11	HU
47.	Screw driver set	2.92	1.53	2.60	1.58	2.64	1.58	NU
48.	Stapling gun	3.52	1.56	2.16	1.22	2.25	1.24	NU
49.	Compass	3.04	1.27	2.59	1.37	2.62	1.36	NU
50.	Glass cutter	4.12	1.13	3.06	1.44	3.13	1.42	MU
51.	Band saw blade	1.88	1.13	3.76	1.31	3.63	1.30	HU
52.	Circular saw blade	3.96	1.40	2.20	1.24	2.32	1.25	NU
53.	Surface planner blade	2.04	1.40	2.58	1.42	2.54	1.42	NU
54.	Bench vice	3.92	1.35	2.28	1.24	2.39	1.25	NU
55.	Work benches	2.04	1.31	3.20	1.22	3.12	1.23	MU
56.	Mallets	3.84	1.40	3.43	1.41	3.46	1.41	MU
57.	Jig saw	3.76	1.20	3.86	1.27	3.85	1.27	HU
58.	Circular saw	2.68	1.31	2.27	1.29	2.30	1.29	NU

59.	Portable drilling machine	3.36	1.75	3.84	1.22	3.81	1.26	HU
60.	Router	2.96	1.43	2.28	1.34	2.33	1.35	NU
61.	Sander	2.72	1.37	3.11	1.74	3.08	1.72	MU
62.	Surface planner	3.44	1.50	3.59	1.57	3.58	1.57	HU
63.	Bench grinder	3.00	1.47	2.47	1.61	2.51	1.60	NU
64.	Sewing machine	3.44	1.50	2.63	1.42	2.68	1.43	NU
65.	Rotary scriber	3.44	1.66	3.44	1.43	3.44	1.45	MU
66.	Rechargeable drill	3.08	1.29	2.94	1.61	2.95	1.59	NU
67.	Reciprocating saw	4.16	1.21	3.17	1.35	3.24	1.34	MU
68.	Scroll saw	1.76	1.09	2.59	1.57	2.51	1.54	NU
69.	Lathe machines	3.48	1.48	2.43	1.58	2.50	1.57	NU
70.	Band saw	2.56	1.39	3.75	1.25	3.67	1.26	HU
71.	Mortiser	3.52	1.42	4.02	1.12	3.99	1.14	HU
72.	Thicknesser	3.40	1.61	3.25	1.24	3.26	1.26	MU
73.	Surface planning machine	3.64	1.25	3.96	1.20	3.94	1.20	HU
74.	Radial arm	2.28	1.31	3.55	1.08	3.46	1.10	MU
75.	Belt sander	2.52	1.45	3.17	1.45	3.13	1.45	MU
76.	Drilling machine	3.68	1.60	2.50	1.42	2.58	1.43	NU
77.	Compressor	2.84	1.11	2.93	1.53	2.92	1.50	NU
78.	Spindle moulder	3.84	1.43	2.99	1.50	3.05	1.50	MU
79.	Router machine	2.12	1.36	2.97	1.58	2.91	1.56	NU
80.	Dove machine	3.88	1.20	2.86	1.46	2.93	1.44	NU
81.	Disc sander	2.00	1.15	2.60	1.44	2.56	1.42	NU
82.	Sharpening machine	3.32	1.62	4.01	1.04	3.96	1.08	HU
83.	Combination machine	3.60	1.29	2.72	1.69	2.78	1.66	NU
84.	Petrol generator.	3.68	1.41	3.79	1.32	3.78	1.33	HU
85.	Wood	2.76	1.45	2.30	1.34	2.33	1.35	NU
86.	Nails of various sizes	3.64	1.44	3.80	1.17	3.79	1.19	HU
87.	Wood glue	2.36	1.44	2.34	1.44	2.34	1.44	NU
88.	Plywood	3.68	1.46	3.79	1.30	3.78	1.03	HU
89.	Sandpaper	3.20	1.32	2.30	1.25	2.36	1.25	NU
90.	Tiner	3.08	1.41	3.61	1.39	3.57	1.39	HU
91.	Paint	3.44	1.42	3.67	1.49	3.65	1.49	HU
92.	Fittings	2.36	1.29	3.29	1.45	3.23	1.44	MU

Source: Field work ( 2022)

**KEY:**

$\bar{X}_t$	=	Mean Rating of Teachers
$\bar{X}_s$	=	Mean Rating of Students
$SD_t$	=	Standard Deviation of Teachers
$SD_s$	=	Standard Deviation of Students
$\bar{X}_G$	=	Grand Mean
$SD_G$	=	Grand Standard Deviation
$N_t$	=	Number of Teachers
$N_s$	=	Number of Students
HU	=	Highly Utilized
MU	=	Moderately Utilized
NU	=	Not Utilized

The data presented in Table 2 above showed that out of 92 items presented, 28 were above the real limit of 3.50 and above. This implies that the items are highly utilized, 20 items have mean between 3.00 - 3.49. This means that they were moderately utilized while the remaining 44 items are below the real limit of 3.50. This means that hand tools, machine tools and equipment for the teaching of carpentry and joinery trade, for skill acquisition in the North-East technical colleges are not extensively utilized.

### Hypotheses 1

**Ho<sub>1</sub>:** There is no significant difference in the mean responses of principals and technicians on the availability of human resources in the North-East technical colleges.

**Table 10: T-test Results comparing mean responses of Principals and Technicians on the adequacy of human resources in the North-East technical colleges**

Variables	N	$\bar{X}$	SD	DF	S.E	t-cal	t-tab	Decision
Principals	11	11.5	4.57	31	1.72	1.30	1.697	Accepted
Technicians	22	9.26	4.83					

**Source: Field work (2022)**

In the t-test table, the summary of result of hypotheses 1 presented in table 10 showed that the value of  $t_{cal}(1.30)$  is less than to  $t_{tab}(1.697)$  at 0.05 alpha level significance. This implies that there were no significant difference in the mean responses of principals and technicians on the adequacy of human resources in the North-East technical colleges.

### Hypotheses 2

**Ho<sub>5</sub>:** There is no significant difference in the mean responses of teachers and students in the utilization of hand tools, machine tools and equipment in the North-East technical colleges.

**Table 6: T-test Results comparing mean responses of teachers and students in the utilization of hand tools, machine tools and equipment in the North-East technical colleges**

Variables	N	$\bar{X}$	SD	DF	S.E	t-cal	t-tab	Decision
Teachers	25	289.6	126.4	371	26.2	0.25	1.96	Accepted
Students	348	282.5	128.6					

**Source: Field work (2022)**

In the t-test table, the summary of result of hypothesis presented in table 6 showed that the value of  $t_{cal}(0.25)$  is less than  $t_{tab}(1.96)$  at 0.05 alpha level significance. This implies that there was no significant difference in the mean responses of teachers and students in the utilization of hand tools, machine tools and equipment in the North-East technical colleges.

## DISCUSSIONS OF FINDINGS

The findings of the study revealed that, hand tools, machine tools and equipment such as smooth planes, jack planes, wooden planes, spoke shave, ripping saw, warrington hammer, marking gauge, auger brace, were moderately utilized for the teaching of carpentry and joinery trade, for skill acquisition in the North-East technical colleges. The findings of the study is collaborated with the work of Udoutin (2012), asserted that tools, equipment and technical facilities utilized in laboratories and technical workshops constitute the learning environment for skill acquisition..

The findings of hypothesis 1 revealed that, the value of  $t_{cal}(1.30)$  was less than to  $t_{tab}(1.697)$  at 0.05 alpha level significant. This implies that there were no significant difference in the mean responses of principals and technicians on the adequacy of human resources in the North-East technical colleges. The findings of hypothesis 2 were also revealed that the value of  $t_{cal}(0.25)$  was less than  $t_{tab}(1.96)$  at 0.05 alpha level of significance. This implies that there is no significant difference in the mean responses of teachers and students in the utilization of hand tools, machine tools and equipment in the North-East technical colleges.

### Summary of the Finding

This study was conducted to determine the availability and utilization of resources for skill acquisition in carpentry and joinery trade in technical colleges in North-East Nigeria. To elicit the responses from the respondents 5 purposes of the study in line with 5 research questions and 5 research hypotheses were formulated to guide the study. Descriptive survey research design was adopted for the study. The population of this study comprised of 850 respondents, this comprises of all the 19 Principals, 46 carpentry and joinery teachers, 41 technicians and 744 NTC III carpentry and joinery trade students across the 19 technical colleges in North-east Nigeria. The Stratified proportional random sampling technique was adopted, 11 Principals, 25 Teachers, 22 Technicians, and 348 NTC III carpentry and joinery trade students of 2021/2022 Academic Session were selected from Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe states respectively. The instrument for data collection for this study was checklist and a Five - Point Likert Scale Questionnaires drawn from NBTE minimum standard. The Checklist Named “Checklist Instrument for Evaluating the Availability and Utilization of Resources for Skills Acquisition in Teaching Carpentry and Joinery. The instrument used to collect data for this



study was validated by three experts, two from Vocational and Technology Education (VTE) Department of Abubakar Tafawa Balewa University Bauchi, and one from the Department of Woodwork Technology Education, Federal College of Education (Technical) Potiskum, Yobe State. Cronbach alpha was used to determine the reliability of the instrument used in this study. The validated instrument was pilot-tested on NTC II carpentry and joinery trade students in Government Technical College Hadejia, Jigawa State, which was out of the study area.

The data for this study were collected by the researcher with the help of two trained research assistants using the course specification manual obtained from NBTE. The checklists instrument to be completed by principals and technicians using inventory record, on the availability of human and material resources. The data collected for this study was analyzed using Simple Percentage, Mean and Standard Deviation and T-test for testing the formulated hypotheses at 0.05 level of significance. The findings of the study showed that qualified carpentry and joinery teachers and technicians are not available for the teaching of carpentry and joinery trade, for skill acquisition in North-East technical colleges. It was recommended that, government should always provide fund for procurement of carpentry and joinery trade resources in the North-East technical colleges.

### **CONCLUSION**

The study was delimited to identify the availability and utilization of resources for skill acquisition in carpentry and joinery trade in technical colleges in North-East Nigeria. Specifically, the study covered all the (19) technical colleges in the North-East Nigeria. The study was also delimited to principals, teachers, technicians, and students of NTC III carpentry and joinery trade in the North-East technical colleges. On the basis of the findings it can be deduced that carpentry and joinery trade resources are inadequate at the same time, the available carpentry and joinery trade resources are not utilized for skill acquisition in the technical colleges in North-East, Nigeria. With inadequate and ineffective utilization of carpentry and joinery trade resources for skill acquisition in the technical colleges, effective teaching and learning and acquisition of practical skills needed by carpentry and joinery trade students for productive work cannot be achieved. Therefore, the contribution to knowledge was that, carpentry and joinery trade resources for skill acquisition in the North-East technical colleges should be made adequate and utilized to enhance development of practical skills for gainful employment to carpentry and joinery trade students. An effective skill acquisition can only be attained and sustained if the teachers, infrastructures, tools and machines required are available, functional, adequate and frequently use for instructional deliveries in the North-East technical colleges.

### **RECOMMENDATIONS**

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

1. Technical teachers must be well qualified and trained for effective training of the students, in North-East technical colleges.
2. Government should always provide fund for procurement of carpentry and joinery trade resources in North-East technical colleges.
3. The government through the Ministry of Education and Ministry of Science and Technology in particular should conduct periodic review of carpentry and joinery trade resources.
4. Technical colleges' administrators should establish a good working relationship with the communities, Parent Teachers Association (PTA), Private Sectors, and Alumni Associations in the provision of carpentry and joinery trade resources in North-East technical colleges.
5. Technical colleges' administrators should undertake a massive campaign for awareness of school-industry relations through seminars, workshops and conferences.
6. Supervisors in North-East technical colleges should assess the utilization of tools and machines supplied by planned inspection.

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