



# **Skills Acquisition And Utilization Of Tools In Bricklaying, Blocklaying And Concreting Trade In Technical Colleges Katsina State**

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## **ABSTRACT**

The study determined the skills acquisition and utilization of tools in Bricklaying Blocklaying and concreting trade of technical colleges in katsina state. The study was guided by two research questions and two null hypotheses. A descriptive survey research design was used for the study. The population of the study comprised 40 Students, 7 Technicians, and 18 Teachers within Katsina state. There was no sampling technique as the entire population was used for the study.. The instrument used for data collection was a structured questionnaire, developed by the researcher and answered based on five point rating scale named “skills acquisition and utilization of tools in Bricklaying Blocklaying and concreting trade in Technical Colleges Katsina state. The instrument was validated by three experts after which was trail tested and 0.86 reliability index was obtained using Cronbach Alpha. The data collected in the study were analyzed using Frequency Count and Percentage mean and standard deviation for the research questions while ANOVA was used to test the hypotheses at 0.05 level of significance. All statistical analyses were done using Statistical Package for Social Sciences (SPSS) version 26. First findings of the study revealed that: The tools used in teaching and learning of Bricklaying, Blocklaying and concreting trade in technical colleges in Katsina State include Line and pins, Hawks, Straight edges, Digger, Tape, Spot boards, Bucket, Pegs, Head pans, Steel rules, Spades, Wheel barrow, Watering can, Pick axes and Ranging poles among others.; Second findings of the study revealed that: possible strategies for improving the utilization of tools include; Need for technical college workshops to be well equipped with modern facilities, provision of technical support unit, adequate information about machines, and provision of electricity. It was recommended that Government should ensure that skills acquisition and utilization of tools in Bricklaying Blocklaying and concreting trade are properly addressed for better productivity.

**Keywords:** skills Acquisition, Utilization of Tools, Bricklaying, Blocklaying and Concreting Trade Technical Colleges.

## **INTRODUCTION**

Bricklaying, Block laying and Concreting works trade like other trade courses are carried out in classroom and workshop learning and training environments and each complement the other. Workshop environment in college setting is the introduction of industry in learning situation, designed to equip students for work in their chosen occupation as demanded by the labour market (National Board for Technical Education [NBTE], 2001). According to Akpan (2017), Bricklaying, Block laying and Concreting works trade at Technical college level is designed to provide the trainee with the essential knowledge and skill that will enable him perform competently in all aspects of Brick-work in the construction industry. On completion of the programme, the trainee should be able to manipulate various

tools in the Bricklaying, Block Laying and Concreting Trade. Manipulative skills are required in brick/block laying and concreting. Skills are those aspects of technical and vocational education which involve hands-on-the-job experience by the students.

The national curriculum for technical colleges centres on the psychomotor domain with relevant emphasis on cognitive and affective domain (FRN, 2013; NBTE, 2003). By implication, much attention is focused on psychomotor or practical component of studies in technical colleges but this is done without overlooking the relevant emphasis on critical areas of cognitive and affective components. The psychomotor component requires that the appropriate materials that are necessary for effective training of the craftsman in his/her chosen trade must be available.

According to Okenwa (2019), Bricklaying, Blocklaying and Concreting operations in the technical college curriculum involve the skills required in accomplishing given tasks in Mixing of Mortars by hand, Moulding of Blocks, Laying of Blocks, Rendering of Walls, Wall Tiling, Pointing Top Walls and Laying of Curved Walls (Arches). It also involves Workability Test on Concrete Slump Test), Placing of Concrete, Application of Admixture to Concrete, Compaction, Curing of Concrete and Fixing of Concrete Joint Materials.

There are different tools to be used in teaching Bricklaying, Block laying and Concreting works trade effectively, However, not all topic require the same type and quality of material. Hence, material, tools are classified in different ways. The criteria for classifying these materials include the degree of expertise/technical skills needed for production, nature of the materials, physiological parameters or sensory modality, the place the material is produced, and miscellaneous characteristics. Based on the foregoing, tools are generally classified into three forms, projected, non-projected materials and manipulative materials (Oladejo, Olosunde, Ojebisi & Isola, 2011). Projected materials according to Iwu, Ijioma, Onoja and Nzewuihe (2011) are forms of equipment that contain bits of information that are projected on screen. They are basically devices that make use of electricity to produce clear images on screen and give illusion to reality in teaching learning process of Bricklaying, Blocklaying and Concreting trade. On the other hand, Olawale (2013) viewed non-projected materials refers to tools containing bits of information that do not require any form of projection before they can be utilized. Furthermore, Oladejo, Olosunde, Ojebisi and Isola (2011) referred manipulative materials as tools which the learner handles skillfully and expertly to bring about the desired behavioral changes. They express the channel through which the required learning takes place hence cutting across all aspects of skill development and mastering learning.

Utilization of wide variety of tools can stimulate the interest and active engagement of learners to acquire the required skills. According to Honrnby (2000), the word utilization comes from the root word utilize which is defined as using something especially for a purpose. Utilization in this context refers to using skill acquisition in utilization of tools in Bricklaying Blocklaying and Concreting Trade in technical college for the effective teaching and learning of bricklaying, block laying, in technical education. Miller (2011) opined that effective utilization of tools in technical colleges' make teaching and learning of bricklaying, blocklaying and concreting trade more interesting to the student as it enable the student understand and demonstrate orderly procedure for construction activities, step by step approaches, and organization of materials, appropriate time limits self-evaluation of the task or product when completed. As the task is been undertaken by the students, the process of skill acquisition is initiated either by conscious or unconscious efforts.

Skill as basic ability is the means by which a person adjusts to life. A person's aptitude and work functions are required and necessary as antidotes suggesting the suitable skills performance and acquisition of same by going through a given work sample. In the work place, skill is what the workers give in exchange for remuneration. If the skill (or the cluster of skill popularly referred to as aptitudes) is satisfactory, the worker and employers gets corresponding satisfaction (Adeyemo, 2009).

Skill acquisition as a distinctive aspect of Bricklaying, blocklaying and concreting trade is referred to as the act of doing, making, manipulating and practicing the theoretical knowledge gained with the uses of materials, tools (Okorie, 2000). As craftsmen and technicians pass through Bricklaying, Blocklaying and concreting trade, it is expected that the trade equip them to functional skill and attitude the will enable

them function well in the industries, labour maker as well as in the society. The NBTE (2004) stresses that the ultimate goal of the program offered in the technical college is to enable trainees perform all the skills and show a good knowledge of the theoretical concepts of the trade as specified in training modules before they are certified. Effectiveness of skill acquisition in Bricklaying, Blocklaying and concreting trade in technical colleges are an integral part of the program as the program is aimed at developing the required man power to fill the gap in the industries, induce self-reliance and function effectively in the society. However, the process of skill acquisition and the utilization of tools come with its own challenges, and these challenges have to be surmounted for effective teaching and learning of Bricklaying, Blocklaying and concreting trade.

Ajayi (2012) opined that tools utilization in Technical colleges posed serious challenges because there are instances where some resources are available but the teachers are not able to utilize them in teaching and learning process as a result of lack of skills. Also in some technical colleges, some modern equipment such as mechanical vibrator, tilting mixer, engineering precision level, computer machines, and others are not used by the teachers because of their inability to use them. Furthermore, Bakare (2006) outlined the following challenges: Nature of the subject matter and the objectives to be attained, number of learners/ students involved, the space of time available, facilities available (the kind and extent of physical facilities and the tools available, including community resources, affect the choice of tools that can be used in teaching and learning), interest and ability of teacher, effectiveness of tools as all Bricklaying, Blocklaying and Concreting Trade teachers should evaluate tools used in terms of the objectives to be accomplished, and the situation at hand, and choose the one that will best meet the goals of the program. However, Fakomogbon (2016) asserted that most of our technical college lack necessary infrastructural facilities required for effective learning.

Assessment of skill acquisition and utilization of tools in Bricklaying Blocklaying and Concreting Trade in technical college is necessary. This will ensure that the needed tools for skills acquisition are provided (available) and utilized. Assessment of Bricklaying, blocklaying and concreting Trade tools for skill acquisition will help to determine whether this tool or equipment is fully utilized or not. Such assessment will help technical colleges to accomplish their goals objectives of teaching skills, encourage and improve skill acquisition and consequently will enhance effective vocational education in Nigeria.

### **Statement of the Problem**

The skill acquisition and utilization of tools in Bricklaying Blocklaying and Concreting Trade in technical college for the effective teaching and learning of bricklaying, block laying, and concreting trade in technical colleges in Katsina state. Pose a significant challenge. Katsina state has a distinct vocational and technical education landscape with a strong emphasis on skill acquisition. However, inadequate access to modern and appropriate tools could hinder the quality of education and skill development in trades like bricklaying, block laying, and concreting. This situation is concerning, as practical training is a cornerstone of technical education, and the absence of adequate tools might undermine students' ability to develop practical skills that align with industry demands.

Katsina State's technical colleges, like many institutions across Northern Nigeria, struggle with outdated or insufficient tools, lack of funding, poor maintenance, and limited investment in technical education infrastructure could contribute to this challenge (Ojo et al., 2018). This issue potentially results in an educational gap where students do not acquire hands-on experience with modern tools and technologies, thereby affecting their readiness for the workforce. In a state where technical skills are in demand due to the construction and building sectors' prominence, the inadequate utilization of tools could negatively impact students' employability and hinder the state's economic growth. Furthermore, the misalignment between the curriculum and skill acquisition and utilization of tools in Bricklaying Blocklaying and Concreting Trade in technical college for the effective teaching and learning of bricklaying, blocklaying, is another dimension of the problem. Technical education curricula should mirror industry requirements and technological advancements, ensuring that students are adequately prepared for real-world challenges (Oluwakemi & Akinjare, 2017). However, the lack of modern tools could restrict the practical exposure and training that students receive, leaving them ill-equipped to adapt to evolving construction methods and standards. This gap might exacerbate the divide between educational outcomes and industry

expectations, ultimately affecting the quality of the workforce produced by Katsina State's technical colleges and, by extension, the region's economic development. Therefore, this study intends to determine the availability and utilization of bricklaying, blocklaying and concreting Trade tools for skill acquisition in Technical colleges in Katsina State.

### **Purpose of the Study**

The purpose of this study is to identify the level of skill acquisition and utilization of tools in Bricklaying Blocklaying and Concreting Trade in technical college for the effective teaching and learning of bricklaying, block laying in technical collages in Katsina State. Specifically, this study seeks to:

### **Objectives of the Study**

The following objectives will guide the study:

1. Identify the utilization of tools use in teaching/learning of Bricklaying, Block laying and concreting works trade in technical colleges in Katsina State
2. Determine the strategies for improving the utilization of tools in Bricklaying, Block laying and concreting trade in science and technical Colleges in Katsina State

### **Research Questions**

The following research questions were answered to guide the study:

1. What are the utilization tools use in teaching and learning of Bricklaying, Blocklaying and concreting trade in technical colleges in Katsina State?
2. What are the strategies for improving the utilization of tools in Bricklaying, Block laying and concreting trade in science and technical Colleges in Katsina State?

### **Hypotheses**

The following hypotheses were formulated to guide the researcher in answering research questions.

**H<sub>01</sub>:** There is no significant difference between the mean responses of Students, Technicians and Teachers in utilization of tools use in teaching learning learning of Bricklaying, Block laying and concreting works trade in technical colleges in Katsina State.

**H<sub>02</sub>:** There is no significant difference between the mean responses of Students, Technicians and Teachers on the strategies for improving the utilization of tools in Bricklaying, Block laying and concreting trade in and technical Colleges in Katsina State.

## **METHODOLOGY**

The study which was conducted in Katsina state Nigeria, adopted a descriptive survey research design. The population of the study was 65 respondents which comprises of 40 Students, 7 Technicians, and 18 Teachers within Katsina state. Simple random sampling was used to selected respondents for the study. The instrument used for data collection was a structured questionnaire the responses on the questionnaire were structured on a 5-point rating scale. The questionnaire was validated by three experts from the Department of Technical Education, Hassan Usman Katsina Polytechnic. Reliability co-efficient of 0.82 was obtained for the instrument using Cronbach Alpha reliability method after a trial test of the instrument was conducted on 6 employers and fourteen Technical college Students at Government Technical College Mashi, Katsina state. Data for the study was collected by the researchers with help of research assistants. The data was collected and analyzed using statistical tools. Mean statistic was used to answer the three research questions of the study while ANOVA was used to test the null hypothesis of the study at 0.05 level of significance. All the analysis was carried out using statistical package foe Social Sciences (SPSS) version 22.

**RESULTS**

**Research Question 1:** *What are the utilization of tools use in teaching and learning of Bricklaying, Blocklaying and concreting trade in technical colleges in Katsina State?*

**Table 1: Frequency Count and Percentage on the utilization of Tools used in Teaching/Learning of Bricklaying, Block Laying and Concreting Trade in Technical Colleges in Katsina State**

S/N	Instructional Tools	Yes		No		Remark
		Freq.	%	Freq.	%	
1.	Brick trowel	70	100	0	0	Agree
2.	Pointing trowel	70	100	0	0	Agree
3.	Plastering Trowel	70	100	0	0	Agree
4.	Sprit level	70	100	0	0	Agree
5.	Plumb bulb	70	100	0	0	Agree
6.	Builders square	70	100	0	0	Agree
7.	Chisel	70	100	0	0	Agree
8.	Sledge Hammer	70	100	0	0	Agree
9.	Club hammer	70	100	0	0	Agree
10.	Line and pins	70	100	0	0	Agree
11.	Conner bulk	62	88.57	8	11.43	Agree
12.	Hawks	70	100	0	0	Agree
13.	Float wood	70	100	0	0	Agree
14.	Wooden float	70	100	0	0	Agree
15.	Straight edges	70	100	0	0	Agree
16.	Digger	70	100	0	0	Agree
17.	Tape	70	100	0	0	Agree
18.	Spot boards	60	85.71	10	14.29	Agree
19.	Jack hammer	70	100	0	0	Agree
20.	Jointing board	70	100	0	0	Agree
21.	Bucket	70	100	0	0	Agree
22.	Pegs	70	100	0	0	Agree
23.	Dumpy level	64	91.43	6	8.57	Agree
24.	Head pans	70	100	0	0	Agree
25.	Steel rules	70	100	0	0	Agree
26.	Spades	70	100	0	0	Agree
27.	Leveling staff	70	100	0	0	Agree
28.	Leveling instrument	70	100	0	0	Agree
29.	Site square	70	100	0	0	Agree
30.	Wheel barrow	70	100	0	0	Agree
31.	Watering can	70	100	0	0	Agree
32.	Pick axes	70	100	0	0	Agree
33.	Ranging poles	70	100	0	0	Agree

Table 1 shows that all the tools presented were accepted as necessary tools for the teaching and learning of Bricklaying, Blocklaying and Concreting trade in technical colleges in Katsina state. From the data on this Table 1, the respondents showed near 100 per cent agreement on all the thirty three hand tools listed except for items 11, 18 and 23 with 88.57, 85.71 and 91.45 percentage level of agreement.

The most tools used in Bricklaying, Block laying and concreting trade such as Line and pins, Hawks, Float wood, Wooden float, Straight edges, Digger, Tape, Spot boards, Jack hammer, Jointing board, Bucket, Pegs, Dumpy level, Head pans, Steel rules, Spades, Leveling staff, Leveling instrument, Site square, Wheel barrow, Watering can, Pick axes and Ranging poles scored 100 per cent acceptance as are the tools use in teaching/learning of Bricklaying, Block laying and concreting trade in technical colleges

in Katsina State, while only three of the items such scored below a 100 percent. This may have occurred as a result of such respondents not being familiar with or have not used such tools to train students.

From the result presented on the Table 1, it is safe to conclude that, the 33 items presented are standard Bricklaying, Blocklaying and concreting trade teaching and learning tools.

**Research Question 2:** *What are the strategies for improving the utilization of tools in Bricklaying, Blocklaying and concreting trade in technical Colleges in Katsina State?*

**Table 2: Mean and standard deviation of Students, Technicians and Teachers on the Strategies for improving the Utilization of Tools for Teaching and Learning of Bricklaying, Block Laying and Concreting Trade**

S/N	Instructional Resources	$n_a = 28$		$n_t = 35$		$n_w = 7$		N = 70		Remark
		$\bar{x}_a$	$\sigma_a$	$\bar{x}_t$	$\sigma_t$	$\bar{x}_w$	$\sigma_w$	$\bar{x}_G$	$\sigma$	
1	Provision of more funds to technical colleges	4.46	0.64	4.54	0.66	4.57	0.53	4.51	0.63	Agreed
2	Teacher/student ratio as contained in the benchmark should be strictly adhering to.	4.39	0.69	4.43	0.74	4.43	0.53	4.41	0.69	Agreed
3	Technical colleges should enter into public private partnership	4.21	0.79	4.26	0.56	4.29	0.76	4.24	0.67	Agreed
4	Teacher be provided with retraining programmes	4.61	0.79	4.66	0.54	4.71	0.49	4.64	0.64	Agreed
5	More collaboration should be established between the schools and industries to help train the graduates	4.25	0.89	4.29	0.67	4.29	0.76	4.27	0.76	Agreed
6	Proper record keeping should be maintained in the workshop stores.	4.25	0.80	4.31	0.72	4.43	0.79	4.30	0.75	Agreed
7	More practical sessions should be organized for the students.	3.32	0.82	3.43	0.92	3.43	0.53	3.39	0.84	Agreed
8	Trainee's commitment and self-initiation in preparing and using instructional facilities	4.32	0.77	4.37	0.69	4.43	0.53	4.36	0.70	Agreed
9	Training status of workshops centre coordinators	3.61	0.88	3.63	0.69	3.71	0.76	4.51	0.63	Agreed
<b>Group Mean</b>		<b>4.16</b>		<b>4.21</b>		<b>4.25</b>		<b>4.29</b>		<b>Agreed</b>

$\bar{x}_t$  = Mean response of Teachers,  $\sigma_t$  = standard deviation of Teachers,  $\bar{x}_a$  = Mean rating of Administrators,  $\bar{x}_G$  = Mean of means,  $\sigma_a$  = standard deviation of Administrators,  $n_t$  = Number of Teachers,  $n_a$  = Number of Administrators, N = Total number of Respondents, U = Utilized, MU = Moderately Utilized

**Hypothesis 1**

There is no significant difference between the mean responses of Students, Technicians and Teachers on the utilization of tools for teaching and learning of Bricklaying, Blocklaying and concreting trade in technical colleges in Katsina state

**Table 3: ANOVA Analysis on the Utilization of Tools for Teaching and Learning**

	Sum of Squares	Mean Square	df	F	P	Decision
Between Groups	.077	.039	2	.901	.411	H <sub>0</sub> Accepted
Within Groups	2.867	.043	67			
Total	2.945		69			

df = Degree of Freedom, p = Probability Value

Table 4 presents the Analysis of Variance among Students, Technicians and Teachers. The result revealed that  $F(2, 67) = 0.901$ , p-value = 0.411 tested at 0.05 level of significance. Since the computed probability value is greater than the level of significant, the null hypothesis accepted, indicating that, there is no significant difference between the mean responses of Students, Technicians and Teachers on utilization of tools for teaching and learning of Bricklaying, Blocklaying and concreting trade in technical colleges in Katsina state.

**Hypothesis 2:**

There is no significant difference between the mean responses of Students, Technicians and Teachers on the strategies for improving the utilization of tools in Bricklaying, Blocklaying and concreting trade in Technical Colleges in Katsins State.

**Table 4: ANOVA Analysis on the Strategies for Improving the Utilization of Tools for Teaching and Learning**

	Sum of Squares	Mean Square	df	F	P	Decision
Between Groups	.072	.036	2	.522	.596	H <sub>0</sub> Accepted
Within Groups	4.630	.069	67			
Total	4.702		69			

df = Degree of Freedom, p = Probability Value

Table 4 presents the Analysis of Variance among Students, Technicians and Teachers the result revealed that  $F(2, 67) = 0.522$ , p-value = 0.596 tested at 0.05 level of significance. Since the computed probability value is greater than the level of significant, therefore, the null hypothesis accepted, indicating that, there is no significant difference between the mean responses of administrators, teachers and workshop attendants on the strategies for improving the utilization of tools in Bricklaying, Blocklaying and concreting trade in Technical Colleges in Katsina State.

**Findings of the Study**

Based on the results presented, the following findings were made:

- 1, The tools used in teaching and learning of Bricklaying, Blocklaying and concreting trade in technical colleges in Katsina State include Line and pins, Hawks, Straight edges, Digger, Tape, Spot boards, Bucket, Pegs, Head pans, Steel rules, Spades, Wheel barrow, Watering can, Pick axes and Ranging poles among others.
- 2, possible strategies for improving the utilization of tools in Bricklaying, Blocklaying and concreting trade in Technical Colleges in Katsina State include: workshops in the technical colleges need to be well equipped with modern facilities, provision of technical support unit in the technical colleges, adequate information about machines, and provision of electricity among others

**DISCUSSION OF FINDINGS**

The findings of the study revealed that the common tools used in teaching and learning of Bricklaying, Blocklaying and concreting trade in technical colleges in Katsina State include Line and pins, Hawks,

Straight edges, Digger, Tape, Spot boards, Bucket, Pegs, Head pans, Steel rules, Spades, Wheel barrow, Watering can, Pick axes and Ranging poles among others. This finding is in agreement with Anderson and Anderson (2013) who conducted a study on career and Technical Education perceived tools and equipment availability related to teaching two strokes Engine content. It was reported that tools used for teaching and learning are made public and every teacher or administrator knows the needed tools needed in his discipline.

4, The findings of the study revealed that possible strategies for improving the utilization of tools in Bricklaying, Blocklaying and concreting trade in Technical Colleges in Katsina State include: workshops in the technical colleges be well equipped with modern facilities, provision of technical support unit in the technical colleges, adequate information about machines, provision of electricity among others. The finding is in tandem with Anderson and Anderson, (2013) who in their submission reported that adequate provision of modern equipment and retaining of teacher of the new equipment will help teachers to eagerly engage students in the utilization of the equipment. Umunadi (2005) also suggested that provision of steady electricity and conducive environment for teaching and learning will increase the use of equipment in teaching and learning activities.

### **CONCLUSION**

The study concluded that the Bricklaying and Blocklaying Students productivity is tied to the skills acquisition and utilization of tools in Bricklaying Blocklaying and concreting trade that can be used to in the teaching and learning process. The study further concluded that the factors impeding teacher's productivity could be remedied through linking of college production activities to communities outside the college environment and making attendance to workshops, seminars and conferences compulsory for teachers.

### **RECOMMENDATIONS**

The study recommends the following based on the findings of the study.

1. Government should ensure that skills acquisition and utilization of tools in Bricklaying Blocklaying and concreting trade are properly addressed for better productivity.
2. Government should encourage building technology teachers and instructors to carry out required technical activities in the schools
3. NCCE should ensure that the working condition and environment are of building technology teachers are improved to boost their productivity

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