

# Brick/Block Laying and Concreting Skills as a Veritable Tool for Gainful Employment and Self-Reliance of Students in Technical Colleges in Rivers State

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## Abstract

The study explored brick/block laying and concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State. Three specific objectives, research questions and hypotheses were posed, formulated and tested at 0.05 level of significance. The study adopted a descriptive survey design. The population of the study comprised 45 (29 teachers and 16 Instructors) teaching bricks/blocks laying and concreting in all the four technical colleges in Rivers State. The study was a census as the entire population was studied. A structured Likert scale questionnaire titled “Brick/block Laying and Concreting Skills as a Veritable Tool for Gainful Employment and Self-reliance (BLCSVTGES)” was used for the study. The instrument had the response options Strongly Agreed (SA), Agreed (A), Undecided (U), Disagreed (D) and Strongly Disagreed (DA). The instrument was subjected to face and content validity by three experts in the department of Industrial Technical Education and a measurement and evaluation experts who carried out a face and content validity of the questionnaire items. The internal consistency of the instrument was determined using Cronbach Alpha Reliability Coefficient and a reliability coefficient of 0.76 was obtained indicating that the instrument was reliable enough for the study. Findings also revealed that the respondents agreed on the brick/block laying skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. Findings of the study revealed that the respondents agreed on the concreting skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. Findings of the study also revealed that the respondents agreed on the building design skills as a veritable tool for gainful employment and self-reliance of Instructors in technical colleges in Rivers State. Based on the findings of the study, the following recommendations were made: technical colleges should be provided with adequate facilities and equipment in teaching brick/block laying and concreting programme as being demanded by the industry, as a remedy to the mis-match between educational output and requirements of the labour market in order to enhance the employability of students passing out of school. The federal and state government of the day and well-meaning Nigerians should help these young people undertake trainings to acquire relevant skills that will take them out of the streets and make them contribute meaningfully both to their families and society at large. The wide gap between the classroom and the industry should be eliminated by skills acquisition policy through the adoption of a 30:70 ratio of theory to practical. Educators should administer more practical work to complement theory in our institutions of learning in order to provide skilled labour for the economy.

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## I. Introduction

Technical and Vocational education is the foundation of nation's wealth and development. It is a type of education that is meant to produce skilled and technical manpower necessary to restore, revitalize, energize, operate and sustain the national economy and substantially reduce unemployment. Technical education is that aspect of education which leads to the acquisition of practical skills as well as the basic and scientific knowledge. According to the Federal Republic of Nigeria (2014), Technical education is the form of education which is partly obtainable at the technical Colleges. This is equivalent to the senior secondary school education but designed to prepare individuals to acquire practical skills, basic and scientific knowledge and attitudes required as craftsmen in various trades. According to Federal Government of Nigeria (2013), technical and vocational education is a form of education involving, in addition to general education, the study of technologies

and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. This specialized education offered in technical institutions is saddled with training of middle level manpower, including Technical Colleges.

Technical colleges are mainly established for the training of students to acquire practical skills, knowledge and attitudes essential for employment in a given occupation. Technical Colleges in Nigeria are established to produce craftsmen at the craft level and master craftsmen at the advance craft level (Federal Ministry of Education, 2013). The courses offered at the technical colleges leads to the award of National Technical Certificate (NTC) and Advance National Technical Certificate (ANTC). The curriculum programmes of technical colleges according to Federal Government of Nigeria (2013) are grouped into related trades. These include; the computer trades, electrical/electronic trades, building trades, wood trades, and mechanical trades. Mechanical trade is a general name used in describing trades that have direct bearing with metal welding/forming and servicing/repairs of machines or machine related equipment and appliances. The trades in this group include agricultural implement and equipment, mechanics work, auto electrical work, auto mechanics works, auto body building, auto parts merchandising, air-conditioning and refrigeration mechanics works, mechanical Engineering craft practice, welding and fabrication engineering craft practice, foundry craft practice, instruments mechanics work and brick/block laying and concreting. These trades or form of education are primarily meant to: provide trained man power in applied science, technology and commerce particularly at sub-professional level. Provide people who can apply scientific knowledge to the improvement and solution of environmental problems for use and convenience of man. Provide technical knowledge and vocational skills, necessary in agriculture, commerce, economic development and others (FRN, 2014). Building as part of infrastructure in construction trade is defined as a man-made structure with a roof and wall standing more or less permanently in one place such as: brick/block-laying and concreting workshops, laboratories, classrooms and storage area for the execution of practical work and safe keeping of materials, tools and equipment (NBTE, 2001).

Brick/block-laying and concreting is designed to provide the trainee with the essential knowledge and skill that will enable him perform proficiently in all aspect of brick/block layer's work as well as the skill in the production of sound concrete structures in the construction industry (NBTE, 2001). Brick/Block-laying and concreting 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 and equipment in the brick/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. Amongst these skills include building design skills.

The effectiveness of the design process in the building industry has a great influence on the success of subsequent processes in the construction of projects and also on the quality of the environment (EU Skill Panorama 2014). This module is intended to introduce the trainee to the basic principles of residential building design and to enable him or her make and interpret building drawings with facility. Several studies have also pointed out that a large percentage of defects in building arise through decisions or actions taken in the design stages (Fayolle & Gailly, 2015). Hence, poor design has a very strong impact on the level of efficiency during the production stage. It is further noted that, the increasing complexity of modern buildings in a very competitive market-place in recent years has significantly increased the pressure for improving the performance of the design process in terms of time and quality. Despite its importance, relatively little research has been done on the management of the design process, in relation to the research time and effort which has been devoted to production and project management (Fonchingong & Fonjong, 2003). They also reiterated that the relatively small cost of the design process compared to the production costs probably disguises its true importance in the performance of construction projects. The fact that design management has been neglected is understandable to some extent because, building design is a very difficult process to manage. It involves thousands of decisions, sometimes over a period of years, with numerous interdependencies, under a highly uncertain environment. A large number of professionals are involved, including architects, project managers, structural engineers and service engineers.

Block-laying and concreting was incorporated into the curriculum of technical colleges in order to facilitate the attainment of the objectives on block-moulding, block-laying and concreting works NBTE, (2004) Block-laying and concreting works is a skill-oriented field of study noted for its capability of equipping learners with saleable skills for self-reliance and also paid employment. Block-laying and concreting work is one of the areas of specialization taught in technical colleges at the intermediate and advanced levels in Nigeria. This programme deals with the acquisition of skills and techniques in block moulding, block-laying and concreting works/occupations to enable an individual earn a living. Skills are acquired to enable the recipient take the best of his/her physical, community and political environment (Geldhof, Weiner, Agans, Mueller & Lerner, 2014). Block laying and concreting work is predicated upon the teaching of skills and also demanding the professional

use of hands. It is designed to equip students with skills required towards the production of educated persons who can effectively work with their brain and hands.

Block laying and concreting works operations involves the skills required in accomplishing given tasks in mixing of mortars by hand, moulding of blocks, laying of blocks, rendering of walls, wall and floor tiling, pointing to walls, creating openings in walls (lintel and arches). It also involves slump test (workability test on concrete), placing concrete in positions, application of admixture to concrete, compaction, curing of blocks and concrete and fixing of concrete joint materials. These operations are based on real jobs and not imitation jobs (Gird & Bagraim, 2008). The training is to be carried out to the extent that it gives the learners a productive ability with which they can secure and hold employment and be able to profit by it. Block-laying and concreting works at technical colleges is geared towards the graduation of craftsmen who have skills, knowledge and attitude to meet the demand and needs of the industries and the society at large. Technical college graduates should acquire academic and technical skills that afford employment and sustain their longevity as productive members in today's complex work environment.

However, the term self-reliance can be seen to mean being able to depend on one self, one's resources rather than those of others. It has to do with what one can do himself/ herself (Marinova & Amzad, 2006). Self-reliance also means relying on one's own abilities and efforts to be independent. The desire of most developing countries including Nigeria, is to have a self-reliant and resilient economy capable of generating an internally self-sustaining growth. Employment means working for one's self or an employer. To be employed a person need to be highly skilled in a trade. Graduates of block laying and concreting works are expected to possess work skills for success in mixing of mortar by hand, laying of bonds, cavity wall construction, rendering, tiling, tuck-pointing to walls, and construction of semi-circular arch. But the observation of the researcher shows that graduates of block laying and concreting works acquired little or no skills in practicing what they have learnt from technical colleges. Most of the graduates remain jobless in the society. Saleh and Dauda (2016) posited that half-baked technical graduates (block laying and concreting craftsmen inclusive) often cause more damages and havocs to building works contracted to them. And since the government cannot provide jobs for all graduates, it becomes necessary that graduates are equipped with work skills in block-laying and concreting works for self employment (Puyate, 2001). Thus, there is need to determine what is known by these graduates and what could possibly be done to improve their effectiveness.

Brick/Block laying and concreting is one of the trade courses offered in technical colleges for the purpose of acquiring theoretical knowledge and practical skill in building construction. Technical education in technical college has course offerings for specialization which include and not limited to auto-mechanics, metal work, building construction, woodwork, Electrical/Electronics engineering (F.R.N, 2004). The N.P.E further outlined general education theory and related courses, workshop practical and industrial training/ production education, theory and related components, which the curriculum of each technical training should consist of. Block laying/Bricklaying and concreting is a branch of environmental studies which deal with building construction, the emphasis is on the building team or personnel involve in the construction, building industries and the process of construction principles and practice of constructional tools, equipment and materials and organization of building industry, like the client, Architect, Quantity Surveyor, Engineer, Land Surveyor, Builders and Constructors. Dokubo (2016) describe, building construction as any industry that has the main objective of constructing, renovating, demolishing, relocating, maintaining and repairing of buildings, chimneys, sporting, recreational activities waste disposal, fencing, landscaping, structural works using building equipment and tools.

Concreting is offered at both intermediate and advanced levels in technical colleges. The curriculum of intermediate concreting in addition to what may be termed general education subjects such as Mathematics, English Language, Physics, Chemistry, Social studies, etc has the core trade subjects to include: Introduction to Building Construction, Concreting, Block-laying/Bricklaying, Land surveying, Quantity Surveying, Technical Drawing, building Drawing and Construction Management (National Board for Technical Education 2007). At the end of the programme, the students are registered to take one or all of the technical certificate examinations listed below:

- a. National Business and Technical Examination Board (NABTEB)
- b. Trade Test III/II
- c. Federal Craft Certificate Examination

NABTEB Examination in Bricklaying and concreting consists of written examinations and practical test in the above mention papers exception of English Language, Mathematics, Social Studies and Construction Management which are purely based on written examination (National Board for Technical Education (NBTE), 2011). In each level of the examination, the candidates are expected to pass in the written paper(s) as well as the practical test to earn a certificate. Concreting operations in the technical college curriculum involve the skills

required in accomplishing given tasks in Mixing of Mortars by hand, Molding of Blocks, Rendering of Walls, Wall Tiling, Pointing Top Walls and Laying of Curved Walls (Arches).

Vocational and Technical Education is concerned with imparting knowledge, skills and attitudes to learners and also preparing persons for the world of work. According to Federal Government of Nigeria (2014) in National Policy on Education, vocational and technical education are aspects of the educational process involving, in addition to general education, study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of the economic and social life.

Building drawing/design can be described as the design and drawing of building plans, elevations, sections, schedules and models. Peace Corps Information and collection Exchange (n.d) stated that Building is a structure that is built, while drawing is a graphical language that cannot be spoken or read aloud but easily understood by Engineers in any country. According to Tantawi (2015), drawing is a scaled representation of a building or parts of a building. Building Drawing has to do with skills acquisition and is capable of making one employable or being self-reliant. According to National Board for Technical Education (NBTE), (2011) *Minimum Standards*, the building drawing course outlines are;

- a) Basic responsibilities in design process
- b) Drafting materials and equipment
- c) Preliminary sketch and design
- d) Working drawing (to include standard symbols for plumbing) up to one storey building
- e) Introduction to Computer Aided Drafting (CAD).

Self-reliance is the autonomy of decision- making and full mobilization of a society's own resources. It also means self-confidence, reliance primarily on one's resource, human and natural, and the capacity for autonomous goal-setting. A self-reliant person is an individual who relies on oneself or on one's own powers and resources, depending less on other people in the management of human and material resources. According to Ofoye (2010), individuals will be self-reliant when they have possible cause to access and utilize the essentials of life which includes good food, clothing, shelter, medication, transportation and functional education.

### **Statement of the Problem**

Technical colleges are post primary schools where students learn skills in various occupations. According to Saleh and Dauda (2016), technical colleges are designed to prepare individuals to acquire practical skills, basic scientific knowledge and attitudes required as craftsmen and technicians at sub-professional levels. Technical colleges are the principal vocational institutions in Nigeria that give full vocational training intended to prepare students for entry into various occupations as operatives or artisans and craftsmen. To Ogumbe (2015), technical colleges are charged with the production of craftsmen and technicians in various occupations. However, Nwokomah (2005) asserted that technical education for workplace readiness, and the opportunities for technical education, are in dire need in Nigeria.

However, employers complaints is that an emphasis on technical or job specific skill is inadequate. Okafor (2011) opined that lack of financial resources, inadequate trained vocational teachers and lack of teaching resources have greatly contributed to the unpreparedness of graduates of technical colleges for workforce and their subsequent job performance within the workplace. Technical college block-laying and concreting works graduates are expected to possess work skills and exhibit high level of job performance in block-laying and concreting. Employers require high job performing persons in order to meet their organizational goals. Job performance is a major prerequisite for future career development and success in the world of work. According to Onyene, Olusanya, Salisu and Johnson (2007), high performers get promoted more easily within an organization and have better career opportunities than low performances. However, the current situation in Nigeria according to Oyebade (2003) shows that it will take more than mere re-engineering technical education in its present state to make it more relevant, responsive and effective in producing graduates with needed skills and training that can perform to the satisfaction of their employers.

Most of the graduates remain jobless in the society. Patterson, Okafor and Williams (2006) posited that half-baked technical graduates (block-laying and concreting craftsmen inclusive) often cause more damages and havocs to building works contracted to them. And since the government cannot provide jobs for all graduates, it becomes necessary that graduates are equipped with work skills in block-laying and concreting works for self-employment. The question is would brick/block laying and concreting skills be a veritable tool for gainful employment and self-reliance of students? Answers to this question gave rise to the study

### **Purpose of the Study**

The general purpose of the study is to assess the brick/block laying and concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State. Specifically, the study sought the following:

1. Brick/Block laying skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.
2. Concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.
3. Building design skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

### **Research Questions**

The following research questions were formulated to guide the study

1. What are the brick/block laying skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State?
2. What are the concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State?
3. What are the building design skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State?

### **Hypotheses**

The following hypotheses were formulated and tested at .05 level of significance

1. There is no significant difference between the mean responses of teachers and instructors on brick/block laying skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.
2. There is no significant difference between the mean responses of teachers and instructors on concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.
3. There is no significant difference between the mean responses of teachers and instructors on building design skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

The study was delimited to assessing the brick/block laying and concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State. Specifically, the following formed the content areas of the study: brick/block laying skills, concreting skills, building design and tiling skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State. The unit of analysis was based on population of the study from the accessible sample and the geographical scope was Rivers state technical colleges. The content scope was based on the specific objectives of the study.

## **II. Methods**

“The study adopted a descriptive survey research design. This design was appropriate for the research because descriptive survey design according to Ogundu and Wordu (2017), is a type of survey research whose purpose was to collect data from a large or manageable sample of a population so as to determine the distribution, occurrence and interaction of educational and sociological phenomena. This design describes the state of the art. In this design the researcher obtained responses from the population.”

Area of the study was technical colleges in Rivers State and the population for this study comprised 45 (29 teachers and 16 Instructors) teaching bricks/blocks laying and concreting in all the four technical colleges in Rivers State. The population was provided according to nominal roll by the office of the Principals (Administration) of each of the schools for 2020/2021 academic session. “The study was a census as the entire population was studied. The choice of census is due to the relatively small size of the population and can be managed. This was in consonance with Ogundu and Wordu (2017) who posited that when a study has a manageable population, the entire population can be studied. A structured Likert scale questionnaire titled “Brick/block Laying and Concreting Skills as a Veritable Tool for Gainful Employment and Self-Reliance (BLCSVTGES)” was used for the study. The questionnaire had five parts. Part A dealt with the identification of designation of respondents. Part B dealt with the Brick/Block laying skills; Part C dealt with the concreting skills. Part D dealt with the Building design skills. Part E dealt with the Tiling skills. The instrument has the response options Strongly Agreed (SA), Agreed (A), Undecided (U), Disagreed (D) and Strongly Disagreed (DA). The instrument was subjected to face and content validity. “The validity of the instrument was carried out

by three experts in the department of Industrial Technical Education were not part of the face and content validity of the questionnaire items. Their suggestions and inputs were incorporated in the drafting of the final copy of the instrument that was issued to the respondents. The reliability of the instrument was determined by administering the structured questionnaire to 15 teachers and 10 instructors of block-laying and concreting in Government Technical College in Bayelsa State using the same curriculum. The school was not part of the main population and sample of the study. Thereafter, the internal consistency of the instrument was determined using Cronbach Alpha reliability coefficient and a reliability coefficient of 0.76 was obtained indicating that the instrument was reliable enough for the study. The researcher administered the instrument to the respondents using a research assistant. The research assistant was educated on how to distribute the instrument. A total of sixty-two copies of the instrument was administered to the respondents and was retrieved on the spot hence the sixty-two copies was retrieved and none was missing, but where on the spot retrieval was no feasible, the researcher and his assistant went back a week after for collection and retrieval of the instrument.

The data collected from the administered questionnaire were analyzed using descriptive and inferential statistics to answer the research questions and test the hypotheses respectively. Which means that the research questions were answered using mean and standard deviation while an independent sample t-test was used to test the null hypotheses at 0.05 level of significance. In answering the research questions, a criterion mean of 3.00 was established. Mean responses of 3.00 and above were considered strongly agreed or agreed, whereas mean responses below 3.00 were regarded as disagreed or strongly disagreed. For testing the null hypotheses, if the significant value at two tailed was equal or greater than the critical value of 1.96, the null hypotheses were rejected. If the significant value at two tailed was less than the critical value of 1.96, the null hypothesis was accepted. The Statistical Packages for Social Sciences Version 23 (SPSS 23) was used for the computation.

### III. Results

**Research Question 1:** What are the brick/block laying skills as a veritable tool for gainful employment and self-reliance of Students in Technical colleges in Rivers State?

**Table 1: Mean and Standard Deviation on Brick/Block Laying Skills as a Veritable Tool for Gainful Employment and Self-Reliance of Instructors**

S/NO	Brick/block Laying Skills as a Veritable tool for Gainful Employment and Self-Reliance of Instructors	Teachers			Instructors		
		$\bar{X}$	SD	RMK	$\bar{X}$	SD	RMK
1	Ability to read and interpret drawings	3.57	.692	SA	3.81	1.039	A
2	Ability to analyse the building plan work	3.56	.732	SA	4.11	.859	A
3	Ability to identify and select tools for a given task	4.28	.750	A	4.35	.719	A
4	Ability to identify and select equipment for the given task	4.93	1.004	A	3.95	.932	A
5	Ability to use appropriately the identified tools and equipment	4.16	.941	A	4.42	.844	A
6	Ability to prepare ground for a given task	4.95	.875	A	4.09	.860	A
7	Ability to select suitable materials for the given task	4.25	.931	A	4.32	.736	A
8	Ability to use correct specifications for given task	4.99	1.088	A	4.31	.790	A
9	Ability to measure accurately the parameters of a given task	4.05	.990	A	4.42	.625	A
	<b>Grand Mean</b>	4.31	0.88	A	4.19	0.83	A

Source: Field Survey, 2021

Data in Table 1 revealed that teachers had a mean range of 3.56-4.99 and standard deviation range of 0.69- 1.08. While the Instructors had a mean range of 3.81-4.42 and standard deviation range of 0.71-1.04. The mean shows that the respondents agreed on the brick/block laying skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. The standard deviation shows the homogeneity of the respondents.

**Research Question 2:** What are the concreting skills as a veritable tool for gainful employment and self-reliance of Students in Technical colleges in Rivers State?

**Table 2: Mean and Standard Deviation on Concreting Skills as a Veritable Tool for Gainful Employment and Self-Reliance of Instructors**

S/NO	Concreting Skills as a Veritable tool for Gainful Employment and Self-Reliance of Instructors	Teachers			Instructors		
		$\bar{X}$	SD	RMK	$\bar{X}$	SD	RMK
1	Set out two abutments of the arch in Flemish bond of one brick thick using bricks, line and pins	4.23	.834	A	4.07	.838	A
2	Lay the two abutments with bricks up to 8 courses.	4.40	.821	A	4.09	.808	A
3	Measure and set out accurately the span of the arch which is 2m	4.09	.722	A	4.04	.947	A
4	Fix the arch centre, struts and folding wedges on the 8th course of the abutments.	4.18	.658	A	4.19	.766	A
5	Mark accurately the position of the key brick on the extrados and the width of the bed joint	4.05	.924	A	4.12	.982	A
6	Fix two nails at each of the striking points and attached a length of line for straightness of the arch that is to be constructed.	4.19	.953	A	4.39	.774	A
7	Check the straightness of the arch along its face by building up the brick work on each side.	3.99	.881	A	4.19	.860	A
8	Mark and cut at an angle the brick with bolster and club hammer using the template	3.95	.990	A	4.26	.856	A
9	Fix in the cut bricks in their positions on the arch centres	3.98	1.03	A	4.32	.776	SA
10	Fill in the joints of the arch with cement and sand mortar screed of 1:2 mix	4.19	1.04	A	4.21	.725	A
	<b>Grand Mean</b>	<b>4.13</b>	<b>0.89</b>	<b>A</b>	<b>4.19</b>	<b>0.83</b>	<b>A</b>

Source: Field Survey, 2021

Data in Table 2 revealed that teachers had a mean range of 3.98-4.40 and standard deviation range of 0.65 - 1.04. While the Instructors had a mean range of 4.04-4.39 and standard deviation range of 0.72 - 0.94. The mean shows that the respondents agreed on the concreting skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. The standard deviation shows the homogeneity of the respondents.

**Research Question 3:** What are the building design skills as a veritable tool for gainful employment and self-reliance of Students in Technical colleges in Rivers State?

**Table 3: Mean and Standard Deviation on Building Design Skills as a Veritable Tool for Gainful Employment and Self-Reliance of Instructors**

S/NO	Building Design Skills as a Veritable tool for Gainful Employment and Self-reliance of Instructors	Teachers			Instructors		
		$\bar{X}$	SD	RMK	$\bar{X}$	SD	RMK
1	Interpret and apply symbols, and conventions and other standard practices in building drawing	4.23	.881	A	4.34	.797	A
2	Identify various architectural draughting materials and equipment	4.44	.926	A	4.16	.902	A
3	Utilized various architectural draughting materials effectively in making building drawings	4.11	.858	A	3.70	1.059	A
4	Demonstrate knowledge of the basic principles of design of dwellings in warm climate	4.26	.897	A	3.86	1.025	A
5	Prepare preliminary sketch design of a modern 3-bedroom bungalow	4.09	.989	A	4.17	.891	A
6	Draw the site and floors plans, elevations and sections of the proposed 3-bedroom bungalow	4.18	.889	A	4.25	.830	A
7	Prepare essential detail drawings of components	3.97	.954	A	4.26	.809	A
8	Draw detail plan of the electrical services	4.04	1.017	A	4.32	.827	A
9	Demonstrate knowledge of the principles of preparing schedules	3.88	.880	A	4.02	.979	A
10	Reproduce drawing	3.61	0.99	A	4.02	1.06	A
	<b>Grand Mean</b>	<b>4.08</b>	<b>0.93</b>	<b>A</b>	<b>4.11</b>	<b>0.92</b>	<b>A</b>

Source: Field Survey, 2021

Data in Table 3 revealed that teachers had a mean range of 3.61-4.44 and standard deviation range of 0.88 - 1.02. While the Instructors had a mean range of 3.70-4.34 and standard deviation range of 0.79 - 1.06. The mean shows that the respondents agreed on the building design skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. The standard deviation shows the homogeneity of the respondents.

**Hypotheses**

There is no significant difference between the mean responses of teachers and instructors on brick/block laying skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

**Table 4: t-test Analysis on Brick/Block Laying Skills as a Veritable Tool for Gainful Employment and Self-Reliance of Students**

Respondents	N	X	SD	$\alpha$	DF	t-Cal	t-Crit	RMK
Teacher	29	4.31	0.88	0.05	43	1.22	1.96	No Sig.
Instructors	16	4.19	0.83					

Source: Field Survey, 2021

Result in Table 4 revealed that t-cal (1.22) is less than t-crit (1.96) which indicates that the hypothesis stated was accepted. Therefore, there is no significant difference between the mean responses of teachers and instructors on brick/block laying skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

There is no significant difference between the mean responses of teachers and instructors on concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

**Table 5: t-test Analysis on Concreting Skills as a Veritable Tool for Gainful Employment and Self-Reliance of Students.**

Respondents	N	$\bar{X}$	SD	$\alpha$	DF	t-Cal	t-Crit	RMK
Teacher	29	4.12	0.85	0.05	43	1.23	1.69	No Sig.
Instructors	16	4.19	0.83					

Source: Field Survey, 2021

Result in Table 5 revealed that t-cal (1.32) is less than t-crit (1.69) which indicates that the hypothesis stated was accepted. Therefore, there is no significant difference between the mean responses of teachers and instructors on concreting skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

There is no significant difference between the mean responses of teachers and instructors on building design skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

**Table 6: t-test Analysis on Building Design Skills as a Veritable Tool for Gainful Employment and Self-Reliance of Students.**

Respondents	N	$\bar{X}$	SD	$\alpha$	DF	t-Cal	t-Crit	RMK
Teacher	29	4.08	0.93	0.05	43	1.21	1.96	No Sig.
Instructors	16	4.11	0.92					

Source: Field Survey, 2021

Result in Table 6 revealed that t-cal (1.21) was less than t-crit (1.96) which indicates that the hypothesis stated was accepted. Therefore, there is no significant difference between the mean responses of teachers and instructors on building design skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.



#### **IV. Discussion of Findings**

Findings of the study revealed that the respondents agreed on the brick/block laying skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. The findings of the study is in line with Agbulu (2016) Block-laying and concreting works is a skill-oriented field of study noted for its capability of equipping learners with saleable skills for self-reliance and also paid employment. Block-laying and concreting work is one of the areas of specialization taught in technical colleges at the intermediate and advanced levels in Nigeria. This programme deals with the acquisition of skills and techniques in block-moulding, block-laying and concreting works/occupations to enable an individual earn a living. Skills are acquired to enable the recipient take the best of his/her physical, community and political environment. Block-laying and concreting work is predicated upon the teaching of skills and also demanding the professional use of hands. It is designed to equip students with skills required towards the production of educated persons who can effectively work with their brain and hands.

Findings of the study revealed that the respondents agreed on the concreting skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. The findings of the study is in line with Ananda and Mukhadis (2016) Block-laying and concreting works operations involves the skills required in accomplishing given tasks in mixing of mortars by hand, moulding of blocks, laying of blocks, rendering of walls, wall and floor tiling, pointing to walls, creating openings in walls (lintel and arches).

Findings of the study revealed that the respondents agreed on the building design skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. The findings of the study is in line with Construction Tuts (2017) Graduates of block-laying and concreting works are expected to possess work skills for success in mixing of mortar by hand, laying of bonds, cavity wall construction, rendering, tiling, tuck-pointing to walls, and construction of semi-circular arch. But the observation of the researcher shows that graduates of block-laying and concreting works acquired little or no skills in practicing what they have learnt from technical colleges.

Findings of the study revealed that the respondents agreed on the tiling skills as a veritable tool for gainful employment and self-reliance of Instructors in Technical colleges in Rivers State. The findings of the study are in line with European Union Skills Panorama (2014) building construction workers are group of skilled persons required to perform job varieties such as: masonry, finishing, painting, plumbing and building structure cleaners. NBTE (2016) and FGN (2013) outlined the expected skill areas offered in employable module to include: Block/Brick laying & Concreting; Building Draftsmanship; Painting and Decoration and Plumbing and Pipe Fitting. It is also expected that students choose an area of interest for effectiveness and efficiency of skill acquisition while in school. However, lack of skill has been identified as a major factor causing Building Technology graduates unemployment (Devonish, Alleyne, Charles-Soverall, Marshall & Pounder 2010). Thus, proper exposure is needed through relevant practical lessons and building construction site visits.

#### **V. Conclusion**

Based on the findings of this study, graduates of block-laying and concreting works from technical colleges require improvement in work skills in mixing of mortar by hand, laying of bonds, cavity wall construction, rendering, tiling, and construction of semi-circular arch for employment in Nigeria. the widening gap between programmes offered in technical colleges and the actual openings available in the labour market to the mismatch between skills demanded in the work place and those provided by the schools. This is evident in most key sectors of the Nigerian economy, where middle level manpower shortages persist and the country remains over-dependent on the skills of expatriates. Therefore, it is very vital that brick/ block laying and concreting students in Rivers State technical colleges be practically skilled in the trade. In the world of work today, it is required that an individual be competent practical-wise.

#### **VI. Recommendations**

Based on the findings of the study and conclusion, the following recommendations were made:

1. Technical colleges should be provided with adequate facilities and equipment in teaching brick/block laying and concreting programme as being demanded by the industry, as a remedy to the mis-match between educational output and requirements of the labour market in order to enhance the employability of students passing out of school.
2. The federal government of the day and well-meaning Nigerians should help these young people undertake trainings to acquire relevant skills that will take them out of the streets and make them contribute meaningfully both to their families and society at large.
3. Due to the negative attitude of some parents and students towards skills acquisition, there is the urgent need for the director in charge of school services in the federal ministry of education and other stakeholders to

embark on programmes that highlight the benefits of skills acquisition training so as to encourage the interest of both parents and students to the programme.

4. The wide gap between the classroom and the industry should be eliminated by skills acquisition policy through the adoption of a 30:70 ratio of theory to practical. Educators should administer more practical work to complement theory in our institutions of learning in order to provide skilled labour for the economy.

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