

**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. Specifically, the study sought: brick/block laying skills, concreting skills, building design skills and tiling skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State. two objectives, research questions and hypotheses guided the study. The study adopted a survey design. 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 study was a census as the entire population was studied. A structured five point Likert scale questionnaire titled “Brick/block Laying and Concreting Skills as a Veritable Tool for Gainful Employment and Self-reliance (BBLCSVTGES)” was used for the study. The instrument has the response options Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (DA). The instrument was subjected to face and content validity. “The validity of the instrument carried out by three experts in the department of Industrial Technical Education 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 .76 obtained indicating that the instrument was reliable enough for the study. 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. 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 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 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.

Keywords: Brick/Block Laying Skills, Concreting Skills and Self-reliance.

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 manmade structure with a roof and wall standing more or less permanently in one place such as: brick/blocklaying 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/blocklaying 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/Blocklaying 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 this 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 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.

Blocklaying and concreting was incorporated into the curriculum of technical colleges in order to facilitate the attainment of the objectives on block-moulding, blocklaying and concreting works NBTE, (2004) Blocklaying 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. Blocklaying 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 blockmoulding, blocklaying 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). Blocklaying 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.

Blocklaying 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 & Bagram, 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. Blocklaying 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 blocklaying 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 blocklaying 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 (blocklaying 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 blocklaying 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.

II. 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 educations for workplace readiness, and the opportunities for technical education, are in dire need in Nigeria.

However, employers' complaints are 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 blocklaying and concreting works graduates are expected to possess work skills and exhibit high level of job performance in blocklaying 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 (blocklaying 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 blocklaying 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.

Aim and Objective

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:

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

Concreting 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

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?

What are the concreting 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

HO1 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.

HO2 There is no significant difference between the mean responses of teachers and instructors on concreting skills as a skills as a veritable tool for gainful employment and self-reliance of students in Technical colleges in Rivers State.

III. Methodology

The study adopted a survey design and was carried out in Technical Colleges in Rivers State. This design describes the state of the art. In this design the researcher obtained responses from the population.”

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. A structured five point Likert scale questionnaire titled “Brick/block Laying and Concreting Skills as a Veritable Tool for Gainful Employment and Self-reliance (BBLCSVTGES)” was used for the study. The questionnaire had five parts. Part A deals with the identification of designation of respondents. Part B deals with the Brick/Block laying skills, Part C deals with the concreting skills. Part D deals with the Building design skills. Part E deals with the Tiling skills. The instrument has the response options Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (DA).

The instrument was subjected to face and content validity and has a reliability coefficient of .76 obtained indicating that the instrument was reliable enough for the study. The data collected from the administered questionnaire were analyzed using descriptive and inferential statistics to answer the research questions and test the hypotheses respectively. That is, the research questions were answered using mean and standard deviation while an independent sample t-test was used to test the null hypotheses at .05 level of significance. In answering the research questions, a criterion mean of 3.5 was established. Mean responses of 3.5 and above were considered needed, whereas mean responses below 3.5 were regarded as not needed. For testing the null hypotheses, if the significant value at two tailed is equal or greater than the .05 the null hypotheses were accepted. If the significant value at two tailed was less than .05 the null hypothesis was be rejected. The Statistical Packages for Social Sciences Version 23 (SPSS 23) was used for the computation.

Presentation and Analysis of Data

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 students

S/NO	Item	Teachers			Instructors		
		X	SD	RMK	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 equipments	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
	Grand Mean	4.31	0.88	A	4.19	0.83	A

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 Students 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 students

S/NO	Item	Teachers			Instructors		
		X	SD	RMK	X	SD	RMK
	Ability to:						
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
	Grand Mean	4.13	0.89	A	4.19	0.83	A

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 4.40-4.39 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 Students in Technical colleges in Rivers State. The standard deviation shows the homogeneity of the respondents.

Hypotheses

HO1 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 5: t-test analysis on brick/block laying skills as a veritable tool for gainful employment and self-reliance of students.

Respondents	N	\bar{X}	SD	α	DF	t-Cal	t-Crit	RMK
Teachers	29	4.31	0.88					
Instructors	16	4.19	0.83					
0.05	43	1.22	1.96	No Sig				

Result in Table 5 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.

HO2 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 6: t-test analysis on concreting skills as a veritable tool for gainful employment and self-reliance of students.

Respondents	N	X	SD	α	DF	t-Cal	t-Crit	RMK
Teachers	29	4.12	0.85					
Instructors	16	4.19	0.83					
0.05	43	1.23	1.69	No Sig				

Result in Table 6 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.

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) who stated that blocklaying 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. Blocklaying 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 blockmoulding, blocklaying 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. Blocklaying 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) who asserted

that blocklaying 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).

V. Conclusion

Based on the findings of this study, graduates of blocklaying 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, 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 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.

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