PRACTICAL SKILLS ACQUISITION FACILITIES IN TEACHING AND LEARNING OF BRICKLAYING, BLOCKLAYING AND CONCRETING PROGRAMME

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Abstract

The study determined the adequacy and utilization of practical skills acquisition facilities in teaching and learning of bricklaying, blocklaying and concreting programme in technical colleges in Niger state. A survey design was employed for the study, 2 research questions and 2 hypotheses guided the study and tested at p<. 05 level of significance. The population for the study consisted of 43 building technology teachers, 6 workshop attendants and 242 final year students. The whole 43 building technology teachers, 6 attendants were used and 120 students were randomly selected, 20 students from each technical college in Niger state offering bricklaying, blocklaying and concreting programme. In carrying out these a 44 items questionnaire were used and validated by three experts in the department of Industrial and Technology Education and Building Technology Department, Federal University of Technology, Minna. The statistical tools used to analyze data were mean and Analysis of Variance (ANOVA). The findings revealed that workshop space is available but practical skills acquisition facilities such as plumb rule, straight edge, metre rule, frechman and others were not adequate and it also showed that were not often in used as expected in technical colleges under the study. It is therefore recommend that building technology teachers of the programme should make effort in improvising this tools locally for the purpose of effective teaching and learning of practical skills and the technical colleges within the state should partner with construction firms towards the provision of this facilities for teaching/learning to take place effectively.

Introduction

Technical education is a factor for economics, social and industrial development of a nation. Teaching and learning are the twin activities involve in the total educational process. They are inseparable, involving the teacher, the learner and other materials and or equipment. It is however, agreed that the teacher play the central role in the teaching learning process. They help to impact knowledge and skills to the learners that can help them to function in life effectively (Joseph, 2010).Ma'aji (2003) observed that for effective teaching of any skill activities, methods and materials play an important role in facilitating the learner's achievement objectives. Skills acquisition generally requires specials instructions techniques in order to achieve maximum objectives. Assisting learners to learn is the ultimate goal of any instructional activity in both formal and informal educational set up. In fostering learning in the classroom teachers bring the learners in close contact with, the curriculum content using appropriate methods and material because these play key role in ensuring effective, interesting and stimulating learning (Ukoha and Eneogwe , 1996).

Puyale (2002) inferred that availability and use of physical facilities for the training of any technical college enhances the vital process of skill acquisition. According to Aina (1981), if

we must transform our ambitions programme of technological advancement into effective vehicle of development, then equipment, tools and materials required for the training of the middle level manpower must be given utmost priority by government. Aina (1999) further stressed that some colleges lack not only workshops and laboratories but also where such are provided, they are ill-equipped and lack of the basic tools and equipment for instruction. Akangbou (1983) observed that there seems to be a mismatch between educational production and the world of work as he lamented that the need for the provision of more and better instructional facilities such as teaching aids ,text books , machines , tools in order to enhance students participation and understanding of principles and practices .

Olaitan, Igbo, oyemachi and Ekong (1999) enumerated some of the strength associated with the economic utilization of instructional materials as follows

1. The learners will be provided with the knowledge and skills of manipulation and management of equipment , tools and materials
2. The learners will be exposed to opportunities that will help them develop skills of self instruction
3. It will help mastering of knowledge of manipulation processes which can enhance retention or recall and improvement of what is learnt through substitution of material devices.
4. It enables the learners to diversify knowledge and skills in the utilization of instructional materials. That is the learner can use materials for other purposes.

Nwosu (1995), pointed out that effectiveness of the teachers contact with students depends upon the efficiency of the teachers in his usage of instructional materials made available for the purpose. One important but remarkable virtue in the use of instructional materials is the concretization of knowledge manifested by the senses of hearing, touch, smell and taste also dominate in knowledge acquisition, over belief is that for intended learning to occur, the teacher must communicate effectively with the learners, effective use of the instructional materials is one way through which the teacher can be successful in the classroom Endeavour's. Fagbemi (1997) was of view that lack of equipment and workshops in school would hinder the teaching and learning of school subjects there by not achieving the goal of the new National Policy on Education. Adeogun (1999) stated that educational resources refer to the available facilities that can be used to achieve educational goals and objectives. These include physical human materials resources and others. He further classified these educational resources as:

1. Physical resources: classroom, laboratories, libraries, hostels, technical equipments, projectors, oscilloscope and computers.
2. Human resources : teachers , technical staffs, administrative staff and students
3. Material resources: textbooks, maps, models, pictures, software and electricity.

Educational resources enhance the meaning of what is presented to learners provided that the learning results are not provided haphazardly. The availability, relevance and adequacy of educational resources contribute to academic achievement and non-availability of these equipments and materials contributes to the poor quality assurance and poor academic performance.

Statement of the problem

Technical and vocational training requires the acquisition of skills must be with a good facility. The results of technical colleges graduates shows that they are poorly taught and the employers of such graduates laments on the poor performance of the graduates from technical colleges which blocklaying,

bricklaying and concreting programme is inclusive.

Governments have continued to earmark billions of naira into vocational and technical education programme, but despite the huge government investment in this education programme particularly in the bricklaying, bricklaying and concreting programme, curriculum theorist and general public have continue to point accusing fingers to the graduates of the programme as not being competent to be accommodated in the labour market and this is associated with the teaching and learning process they passed through with or without relevant materials. On these bases the study on the adequacy and utilization of educational resources in teaching and learning of bricklaying, blocklaying and concreting programme in technical colleges in Niger state is carried out.

Purpose of the study

Two purposes were developed to guide the study;

1. The adequacy of practical skills acquisition facilities for implementation of bricklaying, blocklaying and concreting programme in technical colleges in Niger state
2. The utilization of practical skills acquisition facilities in bricklaying, blocklaying and concreting programme in technical colleges in Niger state

Research Questions

This study provided answers to the following research questions;

1. How adequate are the practical skills acquisition facilities in bricklaying, blocklaying and concreting programme in technical colleges in technical colleges in Niger State?
2. How often are practical skills acquisition facilities in bricklaying, blocklaying and concreting programme used in technical colleges in Niger State?

Hypotheses

The following hypothesis was formulated to guide the study and was tested at 0.05 level of significance

HO_1. There is no significance different between the mean responses of the building technology teachers, workshop attendants and final students with respect to their perception on adequacy of practical skills acquisition facilities in bricklaying, blocklaying and concreting programme in technical colleges in Niger State

HO_2. There is no significance difference between mean responses of the building technology teachers, workshop attendants and final students with respect to the utilization of practical skills acquisition facilities in bricklaying, blocklaying and concreting programme in technical colleges in Niger State

Population

The target population for the study consisted of all the 291. This included the 43 building technology teachers, 6 workshop attendants and 242 final year students of building technology department in the 6 technical colleges in Niger State. Source: (Niger State Science and Technical School Board, 2011)

Sampling

All the 43 building technology teachers and 6 workshop attendants were used but 20 final year students' of building technology department were randomly selected in each of the technical colleges under study making a total of 120 students from 242 final year students of building department in the 6 technical colleges in Niger state.

Instrument for Data Collection

The instrument for data collection was structured questionnaire. The instrument was developed by the researcher using information obtained from the literature. A four point rating scale with the

following response categories and their assigned numerical values were used in the instrument as strongly agree (4); agree (3); strongly disagree (2); disagree (1) respectively.

Validity of the Instrument

The instrument developed was subjected to face and content validation. Three experts drawn from Industrial and Technology Education Department, Building Technology Department, Federal University of Technology, Minna were the validators. The experts` suggestions and observation were taken into full consideration as at the production of the final copy before it was administered.

Reliability of the Instrument

The reliability of the developed instrument was established after a try-out using the item by item technique fashioned along Gay`s (1981), inter-rater reliability concept. The result of the trial test was used to compute the reliability of the instrument using Crobach`s Alpha method to ascertain the extent of homogeneity of the items. The result obtained revealed that the reliability coefficient was 0.82. This means that items in the instruments were internally consistent in measuring what was intended to be measured for the study.

Method of Data Analysis

Data collected for the study was analysed using frequency count, mean to answer research question questionnaire and One-Way Analysis of Variance (ANOVA) to test the hypothesis at 0.05 level of significant. To determine the acceptance, the resulting mean scores was interpreted relative to the number 1-4 as used on the rating scale adopted for the study. it means that any items with mean value of 2.50 and above were considered as accepted while items with mean value of 2.49 and below were considered rejected. The hypothesis was tested using t- table at 0.05 level of significant. Where the calculated t-test value was equal or greater than the t-table value, the hypothesis was rejected meaning that there was significant difference and where the calculated t-test value is less than the t-table value, the null hypothesis was accepted, that there no significant difference.

Research Questions

How adequate are the facilities in bricklaying, bricklaying and concreting programme in technical colleges in technical colleges in Niger State?

Table 1: Respondents Mean Scores on the Adequacy of Practical Skills Acquisition Facilities in Bricklaying, Bricklaying and Concreting Programme used in Technical Colleges in Niger State

$N_1 = 23, N_2 = 6, N_3 = 120$

S/No	ITEMS	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_t$	REMARKS
1	Workshop space for students	3.33	3.10	3.40	3.28	Adequate
2	Laying trowel	3.09	3.23	3.25	3.19	Adequate
3	Straight edge	2.06	2.02	2.20	2.09	Not Adequate
4	Line and pins	2.04	2.03	1.60	1.89	Not Adequate
5	Plumb rule	2.07	2.25	1.94	2.09	Not Adequate
6	Builder square	2.05	2.03	1.67	1.91	Not Adequate
7	Spirit level	2.40	2.05	2.34	2.26	Not Adequate
8	Boat level	1.96	2.06	2.32	2.11	Not Adequate
9	Metre rule	2.35	1.95	2.26	2.18	Not Adequate
10	Club hammer	1.85	2.04	2.06	1.97	Not Adequate
11	Hawk or hand board	1.90	1.80	2.01	1.90	Not Adequate
12	Bevel	2.02	2.03	1.91	1.99	Not Adequate
13	Scotch	1.74	2.21	2.10	2.02	Not Adequate
14	Pointing trowel	2.01	1.70	1.85	1.85	Not Adequate
15	Frenchman	2.05	1.50	1.90	1.82	Not Adequate
16	Jointer	1.94	2.04	2.00	1.99	Not Adequate
17	Pointing rule	1.80	1.93	2.01	1.91	Not Adequate
18	Bat and closer gauge	2.25	2.00	2.15	2.13	Not Adequate
19	Tingle plate	1.75	1.99	1.67	1.80	Not Adequate
20	Cutting gauge	1.76	1.91	2.00	1.89	Not Adequate
21	Brick or block	3.16	3.18	3.05	3.12	Adequate
22	Lime mortar	2.30	2.22	2.11	2.21	Not Adequate

KEYS

$\bar{X}_1$ = Mean responses of Administrator/teachers

$\bar{X}_2$ = Mean responses of workshop attendants

$\bar{X}_3$ = Mean response of students

$\bar{X}_t$ = Mean responses of all respondents

$Xt = \frac{\bar{X}_1 + \bar{X}_2 + \bar{X}_3}{3}$

Research Questions

How often are practical skills acquisition facilities in bricklaying, blocklaying and concreting programme used in technical colleges in Niger State?

Table 2: Respondents Mean Scores on how often are Practical skills Acquisition Facilities put into use in Bricklaying, Blocklaying and Concreting Programme used in Technical Colleges in Niger State

$N_1 = 23, N_2 = 6, N_3 = 120$

S/No		$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	$\bar{X}_t$	REMARKS
1	Workshop space for students	1.90	1.82	1.77	1.83	Not Often
2	Laying trowel	1.85	1.95	1.75	1.85	Not Often
3	Straight edge	1.94	1.85	1.83	1.87	Not Often
4	Line and pins	2.01	1.83	1.87	1.90	Not Often
5	Plumb rule	2.05	2.02	1.68	1.92	Not Often
6	Builder square	2.00	1.95	1.89	1.95	Not Often
7	Spirit level	2.24	2.06	2.02	2.17	Not Often
8	Boat level	1.93	1.94	1.91	1.93	Not Often
9	Metre rule	2.30	2.25	2.20	2.25	Not Often
10	Club hammer	1.94	1.85	1.61	1.80	Not Often
11	Hawk or hand board	1.75	1.30	1.20	1.32	Not Often
12	Bevel	1.61	1.77	1.63	1.67	Not Often
13	Scotch	1.40	1.35	1.28	1.34	Not Often
14	Pointing trowel	2.01	2.03	1.94	1.99	Not Often
15	Frenchman	1.50	1.60	1.35	1.48	Not Often
16	Jointer	2.03	2.01	2.00	2.01	Not Often
17	Pointing rule	1.73	1.50	1.55	1.59	Not Often
18	Bat and closer gauge	1.63	2.00	1.55	1.73	Not Often
19	Tingle plate	1.49	1.51	1.32	1.44	Not Often
20	Cutting gauge	2.24	2.18	2.09	2.15	Not Often
21	Brick or block	2.65	2.57	2.45	2.56	Not Often
22	Lime mortar	2.50	2.24	2.25	2.33	Not Often

KEYS

$\bar{X}_1$ = Means of Administrator/teachers

$\bar{X}_2$ = Mean of Workshop attendants

$\bar{X}_3$ = Students

$\bar{X}_t$ = Mean responses of all respondents

$Xt = \frac{\bar{X}_1 + \bar{X}_2 + \bar{X}_3}{3}$

Testing of Hypotheses

The hypotheses were tested using One-way Analysis of Variance (ANOVA) and there was no group comparison test as none of the hypotheses were found to be significant.

Hypothesis 1

Ho_1 There is no significant difference in the mean responses of building technology teachers, workshop attendants and students regarding the adequacy of the practical skills acquisition facilities for bricklaying, blocklaying and concreting programme in technical colleges in Niger State

The data that tested this Ho_1 were analyzed and presented on Table 3

Table 3: One-way Analysis of Variance (ANOVA) of the Mean Responses of Respondents on the adequacy of the practical skills acquisition facilities for bricklaying, blocklaying and concreting programme in technical colleges in Niger State

Sources of Variation	df	Sum of Squares	Mean Square	f-cal	Critical Value of F	Remark
Between groups	2	0.023	2.431			
Within groups	169	4.129	0.035	0.028	3.00	Not significant
Total	167	4.152				

The result of analysis in Table 3 shows that there was no significant difference (P>0.05) in the mean responses of building technology teachers, workshop attendants and students regarding the adequacy of the practical skills acquisition facilities for bricklaying, blocklaying and concreting programme in technical colleges in Niger State. Thus, the null hypothesis was accepted.

Hypothesis 2

Ho_2 There is no significant difference in the mean responses of building technology teachers, workshop attendants and students regarding the utilization of practical skills acquisition facilities in bricklaying, blocklaying and concreting programme in technical colleges in Niger State

M ,mk ,k, khe data that tested this Ho_2 were analyzed and presented on Table 4.

Table 4: One-way Analysis of Variance (ANOVA) of the Mean Responses of Respondents on the utilization of practical skills acquisition facilities in bricklaying, blocklaying and concreting programme in technical colleges in Niger State

Sources of Variation	Df	Sum of Squares	Mean Square	f-caf	Critical Value of f	Remark
Between groups	2	0.004	0.002			
Within groups	169	8.240	0.031	0.006	3.00	Not significant
Total	167	8.244				

Result presented in Table 4.6 revealed that there was no significant difference (P>0.05) in the mean responses of the respondents on utilization of practical skills acquisition facilities in bricklaying, blocklaying and concreting programme in technical colleges in Niger State. Hence, the null hypothesis was accepted.

Discussion

The findings revealed that the bricklaying, blocklaying and concreting programme in technical colleges under study have adequate workshop but the tools/equipment are not adequate. This confirm Anyakoha (1992) that workshop space is found in most of our technical colleges as it is necessary for any quality learning since practice but inadequate supply of teaching/learning facilities in the workshop is seriously affecting skills acquisition. This finding also confirms the findings of Ukoha (1995) lamented that lack of training facilities and equipment, inadequate social support and lack of qualified instructors as problems inhibiting effective skills acquisition our vocational and technical colleges. Also, Aina (1999) stressed that some colleges lack not only workshops and laboratories but also, they are ill-equipped and lack the basic tools and equipments for instruction. He further stressed that even if the facilities are available students are not most at time expose to the use of such to gain the maximum experience required of them. In

his research work, Akangbou, (1983) observed that there seems to be mismatch etween educational production and this world of work as he lamented the need for the provision of more and better instructional facilities such as teaching aids, textbooks, machine tools, in order to enhance students participation and understanding of principles and practices of any educational programme.

Educational resources are meant to enhance a greater understanding and appreciation of the learning experiences. Olaitan (1999) stated that the requisite or curriculum support facilities in technical colleges include: the infrastructures, equipment supply, library facilities and environment. He further said the quality of education at this level depends on the existence and good condition to these. But in many institutions most of them are too obsolete, poor, non-functional, inadequate, or not even in existence at all. Teaching and learning becomes difficult if when availability of facilities were inadequate. Isa (1997) confirmed that a well equipped workshop with recommended facilities for teaching is of most importance for good delivery and quality of the subject.

Recommendation

Based on the findings of the study the following recommendations were made;

1. The government of Niger State should as a matter of urgency make provision of this educational facilities available to enhance effective practical skills acquisition in the bricklaying, blocklaying and concreting programme
2. Teachers of the programme should make effort in improvising this tools locally for the purpose of achieving good practical skills acquisition
3. Technical colleges should partner with construction firms towards the provision of this facilities for effective teaching/learning to take place
4. Parent Teachers` Association should partner with the technical colleges in order to ensure supply and effective utilization of the tools

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