CAPACITY BUILDING NEED OF WOODWORK TEACHERS IN TECHNICAL COLLEGES AND INDUSTRIAL WOODWORKERS

Onaga, Paul Okwudilichukwu

Abstract

This study is on capacity building needs of woodwork teachers in technical colleges and industrial woodworkers in Enugu State. Given the fact that most of the graduates of woodwork technology are not ready for jobs, the need to determine the skills required by teachers to prepare the students to be employable becomes necessary. One research question and one null hypothesis guided the study. Survey research was adopted for the study. Data from the populations were collected with structured questionnaire named Capacity Building Need Questionnaire (CABNEQ). The population was made up of 24 woodwork teachers in Technical Colleges and 116 industrial woodworkers. No sample, the entire population was used. Item by item analysis was adopted to analyse the data. Performance Gap (PG) Mean, Standard Deviation and t-test statistics was used for the purpose of answering the research question and testing the null hypotheses at 0.05. The instrument was validated by three experts from University of Nigeria, Nsukka. Test retest method was used for the reliability test and Pearson's Product Moment Correlation was used to find the reliability index value and it yielded 0.81. Result revealed that woodwork teachers in technical Colleges and industrial woodworkers need capacity building in carpentry and joinery. The null hypothesis was rejected in some items showing significant association between workplaces woodwork teachers and industrial woodworkers and was accepted in others Among the recommendations was that the woodworker teachers and industrial woodworkers should be guided through various innovative techniques in woodwork.

Keywords: Capacity Building, woodwork teachers, need, industrial woodworkers,

Introduction

Capacity building of teachers has become eminent based on the challenges posed by the invention of new technologies. In other words, innovations in technology have infused a great deal of new knowledge in education curriculum thereby changing the contents, methods, and approaches to teaching-learning. In view of the changes, Omar, Khuan, Kamaruzaman, Awang, and Jamal (2011), state that introduction of technology as a novelty in the educational sector has transformed the trend and profile of students; created new needs in knowledge and technology areas; and modified the roles and function of schools, making them more challenging than ever

before. This is indeed of great concern to educators especially those in the technical section. To this effect, capacity building is required for improvement of these technical teachers.

Capacity building according to Osinem and Nwoji (2010) is the development of the knowledge, skills and attitude of individuals and workforce in an organization to their full abilities. Therefore, capacity building is the process of strengthening one's abilities to mobilize the resources necessary to overcome economic and social problems. To maintain quality delivery of teaching, teachers' development must not be compromised as the society cannot grow better than its teachers (FGN, 2013).

However, the current job specifications of woodwork teachers appear to be silent about the mechanisms that would develop and enhance such teachers' capacity and providing them avenues for professional development. These technology teachers are employed to teach in the technical colleges that is part of the educational and training system in Nigeria. Technical Colleges according to Okoro (2004) are the principal vocational schools in Nigeria. Technical college curricula activities shall be structured in foundation and trade modules (FGN 2013) and trainees shall have options of creating jobs, fitting in the industries and pursuing further studies. To achieve this in construction trades like Furniture, Concrete Practice, Painting' and Decorating Work, Blocklaying/Bricklaying and Concreting, Plumbing, Craft including woodwork technology need more training for the teachers. This is because of the change in trends within the society. According to National Policy on Education (FGN 2004), Carpentry and Joinery, Furniture and Cabinet making, are aspects of Woodwork Technology taught in technical colleges.

In the FGN (2001) the Carpentry and Joinery module is designed to provide the trainee with the knowledge and skills in the design, construction and erection of various structures in building construction like formworks and scaffoldings. Within the commercial sector carpenters

undertake formwork whilst joiners are employed in workshops to produce components such as timber windows, doors, and stairs that form an integral part of residential homes as well as industrial and commercial premises. Carpentry is that aspect of woodwork that deal with structures on construction sites and in buildings like the formworks for concreting, hoardings, arches, scaffolds, joisted floors, stud-work for partitioning and ladders as well as construction of roof members (NABTEB:2001). Carpentry and joinery training can be effective when teachers of woodwork are trained in the skills.

If woodwork teachers in technical colleges and industrial woodworkers engage in capacity building programme, students' learning will be enhanced and there will be increase production of woodwork goods. As the teachers advance in their professional career, students' skill increases. As they visit the industries and interact with the industrial woodworkers during their industrial training the students gain more knowledge and skills.

The industries and institutions exist in the urban and rural areas which has influence on the woodwork teachers and the industrial woodworkers' capacity building. Weiss (1999) reported that workplace is one of the factors that affect the woodwork teachers in technical colleges and industrial woodworkers' performance. To fit into the workplace, students should be prepared for the challenges ahead.

According to Okoro (2000), in Zonkwa (2004) many students leave school ill - prepared for the challenges of workplace and adulthood thereby failing to fit into the standard expected of them in industries and woodwork graduates are not exception. They are unready and unmotivated to carry on learning throughout their lives. Therefore, development of better, equipped teachers need to be a continuous process in the education sector. It is not out of place to

say that teachers in Enugu state need capacity building is the problems and challenges are to be reduced.

Enugu State is one of the states in Nigeria with technical colleges and woodwork industries scattered all over the six education zones: Awgu, Enugu, Nkanu, Nsukka, Obollo-Afor and Udi. The students who later become industrial woodworkers are trained in areas of woodwork technology like furniture and carpentry/joinery. Therefore, the present study on capacity building needs of woodwork teachers and industrial woodworkers in Enugu State becomes necessary to identify the areas they are deficient so as to gear the retraining towards those areas for better performance. That is this study tends to identify the required skills in woodwork and the extent each woodwork teacher or industrial woodworker could perform each skill area so as to determine the gap.

Purpose of the Study

The purpose of the study is to determine the capacity building needs of woodwork teachers in Technical Colleges and industrial woodworkers in Enugu State. Specifically, the study aims to determine:

Research Questions

One research question was raised for the study thus:

1. What is the capacity building need of woodwork technical teachers and industrial woodworkers in carpentry and joinery skills?

One null hypothesis was formulated and tested at 0.05 level of significance.

H_{01}: There is no significant difference between the mean responses of woodwork teachers in technical colleges and industry woodworkers on capacity building in carpentry and joinery skills.

Methods

A descriptive research survey design was adopted for the study. The population for the study is 140 made up of 24 woodwork technical teachers drawn from 19 technical colleges in the six education zones in Enugu State and 116 industrial woodworkers from Enugu state. The entire 140 woodwork technical teachers and industrial woodworkers comprise the sample of the study.

A 17-item structured questionnaire known as 'Capacity Building Needs Questionnaire (CABNEQ)' was used as the instrument for data collection. Each item of the questionnaire is made up two response category of capacity needed and capacity performance options. The capacity need category was assigned 5 response options of Very Highly Needed (VHN) - 5, Highly Needed (HN) - 4, Moderately Needed (MN) - 3, Slightly Needed (SN) - 2, and Not Needed (NN) - 1. Furthermore, the capacity performed category was assigned 5 response options of Very High Performance (VHP) - 5, High Performance (HP) - 4, Moderate Performance (MP) – 3, Low Performance (LP) - 2, and No Performance (NP) - 1. Validity of the instrument was established through the judgment of three experts on Technical Education. A test re-test reliability method was used to determine the reliability of the instrument. The instrument was administered on 10 Technical teachers from G.T.Cs. in Anambra State. The same instrument was

administered on the same 10 technical teachers in Anambra State after a period of two weeks. Subsequently, the scores from the two sets of the test were correlated using the Pearson's Product Moment Correlation. The results of the reliability study yielded an index value of 0.81. Data collection was undertaken by the researcher with the help of technical instructors trained as research assistants. Copies of the questionnaire were distributed to the respondents at their workplaces and colleges and collected back on the spot and on a call back after two days.

Results

The results of the study are hereby presented using frequency distribution tables.

Research Question 1

What is the capacity building need of woodwork technical teachers and industrial woodworkers in carpentry and joinery skills?

Table 1

Capacity Building Need of Woodwork Teachers and Industrial Woodworkers in Carpentry and Joinery. N = 140

S/N	Item Statement	C N		C P		PG	Remark
		$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	
1	Adequate skill on identifying kinds of woods.	4.55	0.85	3.50	0.81	1.05	CB needed
2	Adequate skill on preparation of timber for proper usage.	4.43	1.02	2.74	0.96	1.69	CB needed
3	Measuring and marking out points on timber.	4.39	1.14	2.73	1.15	1.66	CB needed
4	Adequate skill in identifying squared and planed areas on timber.	4.17	0.96	2.76	1.39	1.41	CB needed
5	Setting of pins and use of a gauge (eg. Mortise, marking and chiseling).	4.24	0.98	2.65	0.99	1.59	CB needed
6	Skill on construction of joints (eg. Tee halving, rebate, mortise and tenon, bridle) joints.	4.32	0.95	2.88	1.02	1.44	CB needed
7	Ripping and crosscutting of wood with hand saws.	4.13	1.21	2.98	1.10	1.15	CB needed
8	Skill in drawing production.	4.41	0.89	2.42	0.61	1.99	CB needed
9	Reading and interpreting drawings.	4.37	0.96	2.40	0.87	1.97	CB needed
10	Skill on setting out of a building plan.	4.36	0.88	2.01	1.09	2.35	CB needed
11	Skill on making formworks for concrete structures at construction sites.	4.14	0.95	2.09	0.28	2.05	CB needed
12	Skill on dismantling of concrete formworks.	4.11	1.16	2.49	0.89	1.62	CB needed

13	Skill on preparing scaffoldings for building sites.	4.44	0.87	2.31	0.98	2.13	CB needed
14	Skill on dismantling scaffoldings in building sites.	4.38	0.90	2.49	1.18	1.89	CB needed
15	Skill on making timbering to trenches.	4.34	0.95	2.46	0.94	1.88	CB needed
16	Skill on the development formwork for stair cases.	4.26	0.93	2.11	0.64	2.15	CB needed
17	Construction of different kinds of house roofs.	4.29	0.92	2.32	0.62	1.97	CB needed
	Grand Mean					**1.67**	CB needed

Key: CN = Capacity Need, CP = Capacity Perform, PG = Performance Gap, $\overline{X}$ = Mean, SD = Standard Deviation, CB = Capacity Building.

Table 1 above show the result of the respondents on capacity building needs of woodwork teachers and industrial woodworkers in carpentry and joinery. The data showed that all the items (4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20) have positive performance gap (PG) mean scores of 2.05, 2.69, 1.66, 1.41, 1.59, 1.44, 1.15, 1.99, 1.97, 2.35, 2.05, 1.62, 2.13, 1.89, 1.88, 2.15 and 1.97 respectively. From the performance gap mean scores shown above CB is needed in all the skills stated in Table 1. The Grand Mean of 1.67 indicates that Capacity Building is needed in carpentry and joinery skills

H_{01}: There is no significant difference between the mean responses of woodwork teachers in technical colleges and industrial woodworkers on capacity building needs in Carpentry and Joinery.

Data for testing the hypotheses are presented in Tables 5, 6, 7 and 8 below.

Table 3
t-test Analysis Verifying the Differences in Responses on Capacity Building Needs on Carpentry and Joinery.

N_1 (number of Woodwork Teachers) – 24
N_2 (number of Industrial Woodworkers) - 116

S/N	Item	$\overline{X_1}$	$\overline{X_2}$	SD1	SD2	t-cal	Remarks
1	Adequate skill on identifying kinds of woods.	0.79	2.29	0.04	0.08	-50.868	NS
2	Adequate skill on preparation of timber for proper usage.	1.8	1.08	0.12	0.89	8.4161	S
3	Measuring and Marking out points on timber.	0.61	2.38	0.87	0.21	-20.0078	NS
4	Adequate skill in identifying face edge signs.	0.89	0.37	0.24	0.2	7.6152	S
5	Setting of pins and use of a gauge (eg. Mortise, marking and chiseling).	1.6	1.78	0.54	0.11	-2.6227	NS
6	Skill on construction of Tee halving, rebate, mortise and tenon, joints ect.	1.09	2.2	0.66	1.02	-10.0602	NS
7	Ripping and crosscutting of wood with hand saws.	0.67	0.72	0.72	0.03	-0.6782	NS
8	Skill in producing drawings	0.61	1.73	0.4	0.75	-12.2689	NS
9	Skill in reading and interpreting drawings (Blue prints).	0.69	0.86	0.46	0.24	-2.4963	NS
10	Skill on setting out a building plan.	1.45	1.01	0.62	0.56	4.7582	S
11	Skill on making formworks for concrete structures at	1.83	0.23	0.32	0.59	19.7033	S

	construction sites.						
12	Skill on dismantling of concrete formworks.	-1.1	0.28	-0.21	0.47	-31.7930	NS
13	Skill on preparing scaffoldings for building sites.	1.5	2.06	0.18	0.55	7.6996	NS
14	Skill on dismantling scaffoldings in building sites.	0.51	1.49	0.41	0.79	-10.5094	NS
15	Skill on making timbering to trenches.	-0.5	1.09	-0.38	0.89	-26.1556	NS
16	Skill on the development of formwork for stair cases.	0.83	0	0.56	-0.13	14.8691	S
17	Construction of different kinds of house roofs.	0.97	0.93	0.27	0.23	0.6645	NS

Key:- t-critical value used to compare the t-calculated value for decision taking is 1.960, S=significant, NS = not significant, difference (df) = 138, degree of freedom (p) = 0.05.

From the table above it is observed that the t-calculated values in items 4, 6, 8, 9, 10, 11, 12, 15, 16, 17, 18 and 20 are less than the t-critical, therefore showing that there is no significant difference (NS) in the responses of woodwork teachers in technical colleges and industrial woodworkers in those item. The above results indicate that workplace has association with woodwork teachers in technical colleges and industrial woodworkers in Enugu State in these items. Items 5, 7, 13, 14 and 19 have t-calculated values greater than the t-critical values. The result from these items showing that there is significant difference thereby rejecting the hypothesis for the items.

Discussion of Findings

The findings of the study indicated that woodwork teachers in technical colleges and industrial woodworkers in Enugu State need capacity building in skills like identification of types of timber, preparation of timber for proper use, setting of pins and the use of gauges for mortising, marking and cutting. They also need capacity building on the production reading and interpretation of drawings blue prints, dismantling of scaffoldings, timbering to trenches, development of formwork for stair cases and construction of different kinds of house roof. It is surprising to note that with the result of this study it seems as if government is not aware of the prevalent issues concerning training. This is line with result of Alio (2011) that graduates in technical colleges required to be trained adequately after study to help them in their individual careers. In line with capacity building training in woodwork industry, WISDEC (2009) reported

that it has the mandate to train skilled woodworkers in joinery, furniture and other related woodworks.

In another study by Segun and Yahaya (2010), which was in line with the recent study, support was given to capacity training on woodwork craft. In the study it was understood that most of the workers do not have professional trainings before entering into the job and most times end up accident victims. The result is also in line with the findings of Jerie (2012) who insisted that for workers in the wood industries to excel, continuous training is important agent. To avert this and improve on production, professional training is inevitable and this is made possible by capacity building. It was reiterated that training should be given in some of the skills that are in carpentry and joinery. Areas like accurate reading of measuring tapes, identifying the appropriate type of wood for particular purposes were mention as important areas for training by Jerie (2012).

Conclusion and Recommendation

National policy on education states that, teachers, they should be provided with adequate intellectual and professional background and they should also attend practical training to enable them increase in their technical skills if they are expected to be effective (FGN, 2004). When woodwork teachers in technical colleges and industrial woodworkers are not retrained practically, the standard of their performance will fall and so is the quality of their products.

For a better development in the products of the woodwork industry, woodwork teachers in technical colleges and industrial woodworkers need to possess adequate skills. The haste in our society today and unstable nature of the school system coupled with the economic challenges, most schools are unable to get the students well informed before pushing them into the job market. This has resulted in the production of half-prepared graduates, who find it difficult to adapt to the job environment. It is observed that school-based teaching is not what

one needs to survive in this hard economy. This is because teachers need more training in other to help impart more skills into the students. It is therefore recommended that

1. Woodwork technical teachers in technical colleges and industrial woodworkers should be guided through various innovative techniques in carpentry and joinery during the capacity building exercise.

2. Allocation of greater period of time for practical classes in technical colleges should go a long way in the development of the students' practical skills.

References

Alio, A. N. (2011). Skill needs of graduates of technical colleges in electrical installation and maintenance practice for employment in River state. *International Technology Research Journal*, 2 (1)

Federal Republic of Nigeria (2001). National Business and Technical Education Board syllabus. Lagos: NERDC press.

Federal Republic of Nigeria (2004). *National Policy on Education* (Revised Edition). Lagos: NERDC press.

Federal Republic of Nigeria (2013). *National Policy on Education* (Revised Edition). Lagos: NERDC press.

Fuller R. (2008). Effectiveness review of industrial workers in wood industries; *Journals of entrepreneurship Development.* (12) 3.

Jerie S. (2012). Occupational health and safety problems among workers in the wood processing industries in Mutare, Zimbabwe; Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 3(3): 278-285

Okoro O.M (2004). *Principles and Method in Vocational and Technical Education. Nsukka:* University Trust Publisher.

Omar A. K., Khuan, W. B., Kamaruzaman J., Awang, M., Jamal, N. Y. (2011). Teacher Capacity Building in Teaching and Learning: The Changing Role of School Leadership: (9),1. http://www.adacemicleadership.org 22/09/2012.

Osinem E. C. and Nwoji, C. U (2010). Students Industrial Work Experience in Nigeria: Concepts, Principles and Practice; Cheston Agency Ltd; Enugu, Nigeria.

Segun R. B. & Yahaya M.(2010). Assessment of injuries in small scale sawmill industry of south western nigeria‖. agricultural engineering international: *The CIGR Journal of Scientific Research and Development*. Vol. XII.

Weiss, E. M. (1999). Perceived workplace conditions and first-year teachers' moral, career choice commitment, and planned retention: A secondary analysis. *Teaching and teacher education journal*; 15 (8). Pp 861-879.

Wood Industry Skills Development Centre (WISDEC) (2010). http://wisdec.mtib.gov.my/

Zonkwa, M. C. (2004). Development of principles and guidelines for the implementation of vocational technical education in Kaduna state of Nigeria: Unpublished thesis. May, 2004.