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Teaching Instructional Contents for Woodwork Technology Courses in NCE Awarding Institution's of Northwest, Nigeria

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Abstract: Woodwork Technology at Nigeria certificate in education Technical programme comprises three trade courses, Furniture making, Joinery and Carpentry. The Curriculum content doesn't outline any portion of carpentry work, and it is a prerequisite in training Woodwork Technical teacher at the junior level. This paper examined the content of the curriculum, identified the missing gap of the carpentry aspects that are missing and developed an instructional manual. Relevant related literature to the content of woodwork technology curriculum were reviewed. An objective with corresponding Research Questions and a null hypothesis was tested at 0.05 level of significance guided the study. Research and Development was used as the design for the study. The study was carried out in NCE Technical Awarding Institution in Northeastern Nigeria. The instrument for data collection was a structured questionnaire. The Cronbach Alpha coefficient method was used to determine the internal consistency of the instrument. The findings reveals that the existing instructional content in the NCE awarding institutions curriculum torches only furniture and very little part of joinery and devoid of carpentry. These findings led to the development of the instructional contents areas that is accompanied by instructional manual for teaching the missing content in the existing curriculum. Hence, there is necessity to bring into the curriculum the basic part of carpentry work, so as to produce skilled manpower who are ready for any woodworking industrial challenges

Keywords: Teaching, Instructional Contents and Woodwork.

Introduction

In Nigeria there are common curricula that take care of Technology Education at all level. Though there are many common misconceptions of what curriculum is. GULZAR(2021) defined curriculum to mean a total guided learning experiences designed to facilitate learners learning for establishing quality relationship between what is learnt and what operates outside the school. Which means students will interact with the intention of achieving and recognizing educational outcome. Woodwork curricula ought to be all encompassing, standard, and include a high level of instructor or learner's autonomy. Woodwork Teachers have the right to make final decisions about how to teach and what types of exercises to dispense to their students. According to Babayo & Abdul (2017) they will primarily base their decisions on what they understand about their students and the curriculum they are using. Any curriculum that doesn't tell the teachers what to teach, how to teach, and the types of exercises to assign the concerned students, that curriculum is not standard.

Auta (2015) highlighted that the training instructions of Woodwork Technology at NCE level is too brief that the competencies in the curriculum are not well presented, which lead to very scanty and

insignificant in NCE (Technology) programme in terms of well skilled man power production. This inadequate designed work guideline which does not covers all necessary basic areas, is one of the bottlenecks affecting the actual training of manpower in this creditable areas (Woodwork).

Woodwork Technology consists of three trades Furniture making, Joinery and Carpentry. The above Woodwork Curriculum content doesn't capture any topic viewed to carpentry, and it is prerequisite in training Woodwork Technical teacher. Most of Technical Colleges in northwest Nigeria are offering Carpentry and Joinery and Majority of the technical teachers are NCE graduates.

Secondly, the courses described in the national standard indicated the break-down of the subjects allocated in NCE I, NCE II, and NCE III. These courses are treated in different ways based on the institutions or individual teacher perception, which lead to a production of teachers with different capability, proficiency and ability because no single direction leading to a specific point. Instructional Manual is design to surround the material that are self-sufficient and directed so that teachers and learners may not hunt for additional materials or sources. Muhammad, Yahaya. & Hassan (2019) professed that in order to train students properly in Woodwork Skills for effective participation in the world of work, the skills of teachers need to be improved for effective teaching and learning.

Gap in the woodwork content in NCE minimum standard

All the content in the existing woodwork curriculum of the NCE technical are directly inclined to furniture and joinery, no single item is addressing the carpentry works. Walton (1976) posited that the joinery is responsible for the construction and fixing of doors and window frames, door and sashes, architrave, cornice and skirting moldings, staircase, build-in cupboards and fitting sliding doors and metal fittings. Joinery work is usual painted, enameled or polished.

While cabinet making including furniture design, assembly work, finishing, hand carvers, upholstery, cabinetmaking, and finished-stock inspection.

Carpentry is a structural Woodwork on a building that doesn't require any finishing operations such as rafter, formwork (for Foundation, Wall, Floor, Beam and Column). He works on the site fixing pieces of timber together with joints designed to withstand various stresses or loads and pressures which might be brought to bear on the timber. The Carpenter generally works with rough sawn timber, shrinkage is not taken into account where joints are concerned.

CARPENTERY WORK

The expected gaps to be field are as follows:

1. Wall paneling
2. Basic Principles of Stair Design and Construction
3. Formwork Construction
4. Methods and Techniques of Floor and Platform Construction
5. Construction and Erection of Roofs in Domestic and Industrial Buildings
6. Construction and Erection of Ceiling in Domestic and Industrial Buildings
7. Erection of Scaffolding
8. Dismantling of Scaffolding

All the above will be infused in the woodwork content for the appropriate coverage of a minimum standard for woodwork graduate who can work in any construction industry and an instructional manual covering these content developed to ease its teaching. Omobola, Okeke, & Paulinus O (2012) By using the instructional system manual, the negative trend which attributed to the weight that are placed on the theoretical aspects of the course to the disadvantage of practical contents in the teaching of skill oriented programmes in technical teacher training institutions will be reduced.

Hence the objective of the Study was the determination of the contents of Woodwork Technology Instructional Manual in NCE (Technical) awarding institution in Northeast Nigeria and it answered the corresponding research question: What are the contents of Woodwork Technology curriculum in NCE (Technical) awarding institution? There is no significant difference in the mean responses of lecturers, and technologist of woodwork technology on the objective for the study of the practical skills components in woodwork trade of the NCE (Tech.) programme.

Methodology

Research and Development Design was used for the study. This design is adopted for this study because it is the process used to obtain new knowledge that it might use to create new technology, products, services, or systems that it will be used. According to Ross (2018) Research and Development Design refers to the part of a company's operations that seeks knowledge to develop, design and enhance that company's products, services, technologies or processes. The study was carried out in NCE Technical Awarding Institution in North Western Nigeria which is one of the Geopolitical Zones of the country that consists of seven states. The population of the study consists of 58 lecturers and 32 technologists which totaled to 90. The instrument for data collection is a structured questionnaire. The entire population was used hence, there was no sampling. The questionnaire items were generated and adapted after broad review of available literature on Instructional content of Woodwork Technology. The Cronbach Alpha coefficient method will be used to determine the internal consistency of the instrument. According to Brown (2002) Cronbach alpha provides an estimate of the internal consistency of the instrument. The data collected was analysed using Minitab version (20). A five (5) point rating scale were also be used to analysis each of the questionnaire items.

RESULT

Research Question: What are the contents of Woodwork Technology in NCE (Tech.) in North West, Nigeria?

Table 1: Mean and Standard Deviation Response on the contents of Woodwork Technology in NCE (Tech.) in North West, Nigeria.

	Construct	$\bar{X}_1$	$\bar{X}_2$	S_1	S_2	$\bar{X}$ G	Remark
1	Workshop Safety Rules and Regulations	4.88	4.90	0.63	0.32	4.89	Very Highly Required
2	Classification of hand tools and their uses	4.00	4.00	0.48	0.67	4.00	Required
3	Tree growth - Conversion and seasoning of timber	4.31	4.40	0.68	0.52	4.34	Highly Required
4	Hand tools and their classifications	4.06	4.10	0.68	0.74	4.08	Highly Required
5	Preparation of stock using hand tools	4.25	4.40	1.11	0.70	4.31	Highly Required
6	Types and construction of woodwork joints	4.19	4.20	0.86	1.32	4.19	Highly Required
7	Career in Woodwork Industry	3.75	3.90	0.83	0.88	3.81	Moderately Required
8	Defects and diseases in timber	4.19	4.20	0.70	0.79	4.19	Highly Required
9	Various properties of timber	4.31	4.10	0.95	0.74	4.23	Highly Required
10	Various Nigerian and West African timbers	4.31	4.10	0.58	0.99	4.23	Highly Required
11	Various types of manufactured Boards	4.75	4.60	1.14	0.70	4.69	Very Highly Required
12	Simple Woodwork Technology design principles	3.69	3.80	0.96	1.32	3.73	Moderately Required

13	Different fasteners and fittings	4.13	4.10	1.00	1.20	4.16	Highly Required
14	Different types of Wood adhesives	3.94	3.90	1.03	1.20	3.92	Moderately Required
15	Design principles in the construction of Woodwork joints	4.50	4.30	0.51	1.25	4.42	Highly Required
16	The importance of safety in Woodworking machine shop	4.44	4.50	0.51	0.53	4.46	Highly Required
17	Sequence of operations in machine Woodworking	4.44	4.60	0.68	0.52	4.50	Very Highly Required
18	Types of Woodworking machines and operations	4.25	4.40	0.93	0.70	4.31	Highly Required
19	Basic maintenance of Woodworking machines	3.75	4.00	0.48	0.94	3.84	
20	Preparation of Wood surface for finishing	4.31	4.40	0.52	0.52	4.34	Highly Required
21	Safety precautions in wood finishing	4.50	4.60	0.93	0.52	4.53	Very Highly Required
22	Principles and construction of upholstery items	3.75	4.00	0.89	0.94	3.85	Moderately Required
23	Upholstery tools and equipment	3.88	4.10	1.18	0.88	3.96	Moderately Required
24	Upholstery materials	3.75	3.80	1.10	1.32	3.77	Moderately Required
25	Re-conditioning of Woodwork items	3.50	3.60	0.97	1.26	3.54	Moderately Required
26	Wall paneling	3.50	3.60	1.03	1.17	3.54	Moderately Required
27	Formwork Construction	4.50	4.40	0.40	1.26	4.46	Highly Required
28	Type of doors and windows and their construction technique	4.81	4.80	1.00	0.42	4.81	Very Highly Required
29	Methods and Techniques of Floor and Platform Construction	4.25	4.20	0.51	1.23	4.23	Highly Required
30	Construction and Erection of Roofs in Domestic and Industrial Buildings	4.44	4.50	0.34	0.53	4.46	Highly Required
31	Construction and Erection of Ceiling in Domestic and Industrial Buildings	4.88	4.90	0.34	0.32	4.89	Very Highly Required
	Grand Mean	**4,20**	**4.30**	**0.77**	**0.85**	**4.35**	**Highly Required**

The result in research question displayed that 5 items out of 31 on Woodwork Technology content were remarked as Very highly Required through the mean between 4.50 to 5.00, 16 items out of 31 with mean scores 4.00 to 4.49 were consequently considered Highly Required. While 9 construct out of 24 with mean scores between 3.00 to 3.99. This specified that lecturers and technologist accepted the items as highly required in the Instructional manual for teaching Woodwork Technology in NCE awarding institutions.

Null Hypotheses

There is no significant difference in the mean responses of lecturers, Technologist of Woodwork Technology on contents in Woodwork Technology at NCE (Tech.) level.

Table 3: Independent t-test for lecturers and technologists' on the content of woodwork technology in NCE (Tech.).

	N	Mean	Std. Deviation	t	P-values	Decision
Lecturers	16	4.1081	45813			
				-.686	. -.698	Null hypothesis upheld
Technologies	10	4.2410	.51574			

Based on the independent t-test, there is no significant difference between the mean response of lecturers and technologists' on the content of woodwork technology in NCE (Tech.). Therefore, the null hypothesis is upheld.

Findings

The result in research question displayed that:

5 items out of 31 on Woodwork Technology content were remarked as Very highly Required through the mean between 4.50 to 5.00, 16 items out of 31 with mean scores 4.00 to 4.49 were consequently considered Highly Required. While 9 construct out of 24 with mean scores between 3.00 to 3.99 this specifies that lecturers and technologists accepted the items as highly required in the Instructional manual for teaching Woodwork Technology in NCE awarding institutions.

Discussions of the Findings

The finding on major skill areas (furniture, carpentry and joinery) that constitute Woodwork Technology contents with their respective safety regulations. Based on the responses of Lecturers and Technologists on the content of Woodwork Technology their response were in agreement with the findings of Garba (2006) who developed and validated an instrument for teaching practical components of woodwork technology in colleges of education in Nigeria.

Conclusions

These findings led to the conclusion that the contents in the instructional manual are detailed and standard. The contents of the existing minimum standard, currently in use for training NCE (Tech.) students in Woodwork Technology is devoid of some important content areas which need to be reviewed to make it standard.

Recommendation

1. The existing instructional content in the NCE awarding institutions minimum standard addressed only furniture and very little part of joinery. Itis necessity to infuse into the curriculum the basic part of carpentry.
2. There is need for the curriculum to be reviewed by curriculum planner and developers to add these outlined gaps.

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