

Assessment of Woodwork Technologists' Up-Skilling Needs Using Discrepancy Model in Tertiary Institutions in North-Central, Nigeria

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Abstract

This study used the Discrepancy Model to assess up-skilling needs of woodwork technologists in the tertiary institutions in the North Central states of Nigeria. Specifically, the study determined the skills required, the skills possessed and the up-skilling needs of woodwork technologists. Three research questions and one hypothesis were formulated to guide the study and a 68-item structured questionnaire was used for data collection. The study was a cross-sectional survey design which involved the use of structured questionnaire to seek the views of woodwork technologists on upskilling needs. The questionnaire was validated by two Woodwork lecturers from the Industrial and Technology Education Department, Federal University of Technology, Minna. A population of one hundred and one (101) technologists from 31 tertiary institutions was involved and there was no sampling because the population was manageable. The data generated was analyzed using IBM Statistical Package, version 20. Mean and standard deviation were used for answering the research questions one and two while z-test was used to test the null hypothesis for the purpose of ascertaining the up-skilling needs, which was used as a guide to answer research question three. The study found out that 68 skills were required for optimal job performance. In addition, the technologists moderately possessed the skills in all the 68 items and there was a need for up-skilling at higher level in the 23 items where significant difference lies. Based on these findings, it was recommended that; the management of each of the tertiary institutions should use the identified skill needs to organise separate capacity building workshops for the technologists, National University Commission and the National Board for Technical Education. Additionally, the National Commission for Colleges of Education should use the identified skill needs to upgrade the curriculum of Universities, Polytechnics and Colleges of Education.

Keywords: Assessment, Technologists, Skill, Tertiary Institution

Introduction

Tertiary Education is defined as the training received after Post Basic Education in Institutions such as Universities, Colleges of Education, Polytechnics and Monotechnics such as Schools of Health Technology, National Teachers Institute (NTI) and College of Agriculture (Federal Republic of Nigeria; FRN, 2013).

Tuckman, (2005) described a technologist as an expert in the field of engineering and technology who uses technology in a particular field, they are workers of tertiary institutions and are also in charge of student practicals, maintenance of tools and equipment in their various areas of specialization such as architectural technologist, electrical technologist, building Technologist, automobile technologist among several others who work in formal sectors of the economy.

Woodwork technologists are specialists whose work includes Marking, Measuring, Cutting, Joint Making and Finishing (Johnson, 2004). Woodwork technologist acquire the knowledge and skills relating to woodworking in Carpentry, Joinery, Cabinet Making and Machine woodworking through formal educational system. These technologists obtained certificates such as Bachelor of Technology

(B.Tech), Higher National Diploma (H N D) and Nigeria Certificate in Education.(Technical) (N C E Tech).

Up-skilling can be referred to as the upgrading of skill of technical personnel's attitude, knowledge, competences and work practices to facilitate their effective performance to the expectations of their employers and earn credit for their performance (Imhabekhai, 2000). It was further stressed that upskilling is a function of observed needs in habit, knowledge and skills which is an improvement on existing behaviour. However, Up-skilling according to Canadian Chamber of Commerce (2013) refers to skills improvement and renewal of workers' ability in order to enhance the employees' skill performance in their current positions and equip employees with skills required to advance to higher positions. Consequently, up-skilling of technologists in tertiary institutions refers to up-grading the skills and knowledge of technologists to offset the challenges of technological development. The various types of up-skilling are induction training, off-the-job training, upgrading skills, on-the-job training and multi-skilling (Olatunji, Ajibola & Coker, 2000). Such up-skilling takes place in formal settings which include, tertiary institutions, UNESCO-Nigeria Technical Vocational Education Project North Central Nigeria, National Agency for Science and Engineering Infrastructure (NASENI), the National Directorate of Employment (NDE), Federal Ministry of Labour and Productivity and Industries among others.

The reason for up-skilling is to bring about a transformation in performance of the technologist. Upskilling is planned based on Assessment of needs. Huba and Freed (2000) described assessment of needs as the process of ascertaining skills, knowledge and competences of workers. Therefore, assessment in the context of this study is a systematic method of identifying up-skilling needs of woodwork technologists in the North Central Zone of Nigeria. Establishing up-skilling needs require the use of Needs Assessment Model.

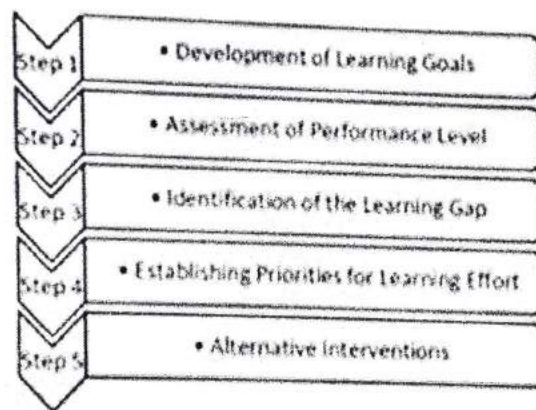


Figure 1: Stages of Needs Assessment (Smith & Ragan, 2005)

According to McKillip (2000) Needs Assessment models are of various types. Some of which are the Discrepancy Model (DM) which is described as most straight forward and thus widely used in education and also it is about determining the skills required for job performance, the skills possessed and the difference between the skills required and possessed which are referred to as the needs. The Marketing Model (MM) which is a feedback process of need assessment that aids organizations to adapt and learn about the needs of their clients. Decision Making Model (DMM) involves the use of

Multi Attribute Utility Analysis (MAUA) to solve malfunctions of model. The most appropriate model for this study is the Discrepancy Model because it helps in determining the difference between present stage of job performance and the future stage of job performance and this can be used for developing training programme (Kaufman, 1998). This model was therefore used as a guide in formulating the objectives of the study and conducting the research. Recognizing contributions of woodwork technologists to National Development and the technological developments in woodwork

sectors and their implications to the tertiary institutions of learning, it was therefore necessary to carry out Need Assessment using the Discrepancy Model to determine up-skilling needs of woodwork technologists working in tertiary institutions of the North-Central Nigeria for improved service delivery.

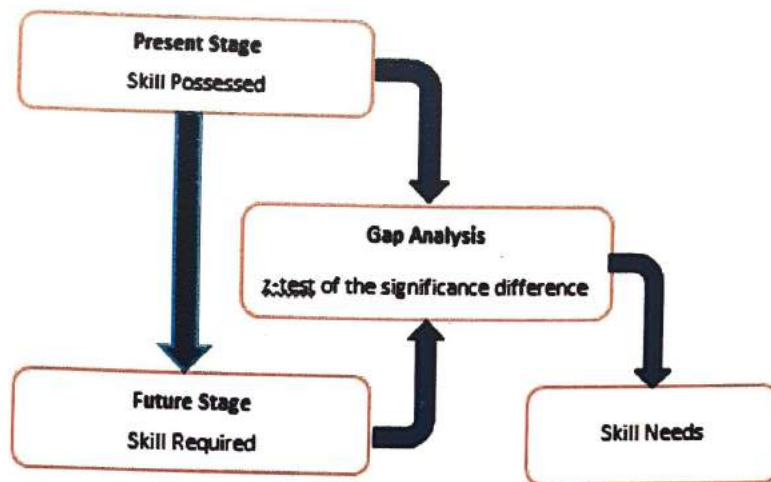


Figure 2: Up-Skilling Needs Assessment Model Showing Difference between the Means of Skill Required and Skill Possessed using z-test (Discrepancy) (Kaufman & English, 1979).

Statement of Problem

The woodwork industry is undergoing a lot of transformation as a result of Technological Development. The technological development in woodwork involves new tools, equipment and advanced processes in woodworking. The effect of these new tools and equipment is the new ways of wood processing. Therefore, The implication of these developments in equipment and tools to the wood technologists is that the training received by the technologists is outdated because some of the technologists were not trained with the current modern tools, equipment and as such find it difficult to operate these new tools and equipment (Umar, Idris, Audu,, Hamza, Igwe, & Maaji, 2014). Bybee & Loucks-Horsley (2000) lamented that the new tools and equipment provided by the federal government for the takeoff of technical programmes were inactive because there were no skilled personnel to operate them. In the opinion of Okejimi (1998), equipment and tools are of little or no use in the absence of qualified and experienced personnel. Furthermore, some of these new tools and equipment are not in the curriculum of tertiary institutions and therefore, were not used for the training of woodwork technologists. The implication of these technological development and provision of new tools and equipment by government require technologists of tertiary institutions to acquire up-skilling in order to remain relevant as well as to help the students in workshop practicals and maintenance of woodworking tools and machines.

The review of related studies on Need Assessment such as (Olabiyi, 2013; Bello, Danjuma & Adamu, 2007; Adavbiele, 2013) revealed that there is little or no information on up-skilling needs of the woodwork technologists in North Central, Nigeria. Consequently, the problem posed as a question is that what are the up-skilling needs of the woodwork technologists in North Central, Nigeria?

Objectives of the Study

The study used Discrepancy Model to assess the up-skilling needs of woodwork technologists in tertiary institutions in North Central, Nigeria for the purpose of providing baseline data for developing up-skilling programme. Specifically, the study determined the:

1. Skills required by Woodwork Technologists for optimal performance of their job in tertiary institutions in North Central, Nigeria.
2. Skills possessed by Woodwork Technologists for optimal performance of their job in tertiary institutions in North Central, Nigeria.
3. Up-skilling needs of woodwork technologist's for optimal performance of their job in tertiary institutions in North Central, Nigeria.

Research Questions

The following research questions were formulated to guide the research work:

1. What are the skills required by woodwork technologists for optimal performance of their job in tertiary institutions in North Central Nigeria?
2. What are the skills possessed by woodwork technologists for optimal performance of their job in tertiary institutions in North Central Nigeria?
3. What are the up-skilling needs of woodwork technologists for optimal performance of their job in tertiary institutions in North Central Nigeria?

Hypotheses

The following null hypothesis was formulated to guide the research question and was tested at 0.05 level of significance

- H01; There is no significant difference in the ratings of skills required and skills possessed by woodwork technologists for optimal performance in woodwork technology in tertiary institutions in North Central, Nigeria.

Research Methodology

The study was a descriptive survey research and it adopted Cross-sectional survey research design. The study involved the use of a structured questionnaire to seek the views of woodwork technologists from the tertiary institutions in North Central, Nigeria on their up-skilling needs. The Cross-Sectional survey design was considered most appropriate for this study because according to Louis, Lawrence and Keith (2007), cross-sectional study is one that seeks the views of a cross section of a population from different background with a view to describing the views of the population. The design was used successfully for similar studies by Adavbiele (2013) who studied the technical skill needs of technical teachers in South-South Nigeria and Bello, Danjuma and Adamu (2007) also used it to determined Vocational Training needs of 15 – 25 years old out-of-school in Bauchi Metropolis.

The Study was carried out in 31 tertiary institutions; Universities, Polytechnics and Colleges of education which are located in the six states and Federal Capital Territory situated in North Central, Nigeria. The population for the study was 101 woodwork Technologists in the thirty-one (31) public tertiary institutions in the North-Central, Nigeria. This population comprised all wood technologists drawn from the 31 tertiary institutions (Universities, Polytechnics and Colleges of Education). Because of the manageable size of the population, all the 101 technologists were used for the study.

The research instrument used for this study was a researcher-designed structured questionnaire. The questionnaire has 3 major sections labeled section A and B. Section A contained Woodwork technologists' bio-data information. Section B relates to skills required and skills possessed by woodwork technologists with 68 items.

The questionnaire was administered by the researcher with the help of three research assistants who handled the institutions in Kogi, Plateau and Benue states. These research assistants were briefed on how to distribute the questionnaire and ensure that the completed copies of the questionnaire were collected same day, where possible. The Retrieval of the questionnaire was done by the researcher and the research assistants and the retrieved questionnaire were sorted, collated and coded. The method of retrieval of the questionnaire yielded a 100% return rate.

Descriptive statistics (mean and standard deviation) was utilized in answering research questions 1 and 2. Therefore, to determine the skill required and possessed by woodwork technologists, the resultant mean scores were translated in respect of the idea of real lower and upper limits of numbers 1-5 as expended by the rating scale implemented in the research. The decision points were based on the following interpretation; that is, any item with mean rating of 1.50 and above is considered "Required/Possessed" while any mean rating value that is below 1.50 is considered "Not Required/Possessed".

The response modes for skill required were: Highly Required (HR, 4.50 - 5.00), Required (R, 3.50 - 4.49), Moderately Required (MR, 2.50 - 3.49), Slightly Required (SR, 1.50 - 2.49) and Not Required (NR, 1.50 - 2.49). While the response mode for skill possessed were Highly Possessed (HP, 4.50 - 5.00), Possessed (P, 3.50 - 4.49), Moderately Possessed (MP, 2.50 - 3.49), Slightly Possessed (SP, 1.50 - 2.49), Not Possessed (NP, 1.50 - 2.49).

The z-test was utilized in testing the hypothesis at .05 significance level such that items with significant difference between skill required and possessed were identified as areas of needs.

Results

Research Question One, Two and Three

What are the skills required, skill possessed and up-skilling needs by woodwork technologists for optimal job performance in woodwork technology in tertiary institutions in North Central Nigeria?

Table 1: Mean and z-test of skill required and possessed by the woodwork technologists for optimal performance in woodwork technology in tertiary institutions in the North Central Nigeria.

S/N	ITEMS	\bar{x}_1 N=101	\bar{x}_2 N=101	SD ₁	SD ₂	Sig.	Remark
Skills in General Woodworking							
1.	Classifying of wood into hard and soft wood.	3.62	2.96	1.35	1.44	0.01	S
2.	Identification of both physical and mechanical properties of timber and its characteristics	3.60	2.76	1.13	1.30	0.01	S
3.	State technical names for marketing wood.	3.71	2.59	1.13	1.39	0.09	NS
4.	Identification wood defects both natural and artificial.	3.62	2.62	1.26	1.24	0.38	NS
5.	Identification of types of wood preservative.	3.62	2.62	1.27	1.16	0.11	NS
6.	Treat wood with relevant preservative.	3.83	2.50	1.18	1.27	0.37	NS
7.	State the process manufacture board and its application.	3.62	2.35	1.27	1.15	0.07	NS

8. Work to a detailed drawing and transfer details to a full size set out	3.86	2.65	1.13	1.14	0.01	S
9. Utilization of factors of a good design.	3.81	2.73	1.18	1.36	0.07	NS
10. Design works with emphasis on construction techniques.	3.80	2.54	1.04	1.15	0.00	S
11. Sharpen saws and other cutting tools	3.71	2.74	1.28	1.35	0.09	NS
12. Prepare bill of materials	3.61	2.43	1.36	1.24	0.23	NS
13. Read and interprets drawings to determine materials required for construction.	3.74	2.51	1.15	1.19	0.11	NS
14. Restores a structure to a former state in all aspect of woodwork.	3.78	2.51	1.03	1.17	0.01	S
15. design based on elements and principles of good design	3.66	2.35	1.10	1.09	0.02	S
16. Mix pigments, oils and other ingredients to obtain the required colours	3.69	2.53	1.14	1.30	0.32	NS
Skills in Cabinet Making						
17. Cut, square, and face timber to, a given size	3.62	2.60	1.18	1.21	0.02	S
18. Carry out basic practices of wood sawing and planing wood surface.	3.39	2.64	1.25	1.40	0.27	NS
19. Carry out sanding and assembling of wood articles.	3.55	2.58	1.26	1.26	0.53	NS
20. Design and construct simple living room furniture with emphasis on skill disposition on good finishing and maintenance of equipment.	3.79	2.41	1.18	1.24	0.46	NS
21. Select appropriate tools, materials, process and products	3.47	2.72	1.20	1.28	0.02	S
22. Finish or refinish damaged, worn, used or new furniture to high – grade furniture and specified color finish	3.39	2.51	1.30	1.17	0.09	NS
23. Utilize knowledge of wood properties, finishes and furniture styling	3.61	2.36	1.13	1.18	0.12	NS
24. Connect electrical portable sander and control operation.	3.73	2.50	1.17	1.17	0.04	S
25. Tell the gauge and types of at least six sizes of screws and the correct drills to use with them	3.62	2.48	1.27	1.33	0.36	NS
26. Carry out veneer work for aesthetic value	3.74	2.22	1.14	1.07	0.10	NS
27. Construct wardrobe and storage chest	3.48	2.67	1.32	1.31	0.37	NS
28. Operate spray gun in spraying operations	3.60	2.52	1.18	1.28	0.35	NS
29. Construct and assemble baby carriage	3.36	2.74	1.22	1.28	0.05	NS
30. Prepare surface and apply paint, varnish, and enamel	3.58	2.72	1.18	1.14	0.00	S
Skills in Joinery Work						
31. Mark off and make the joint commonly used in the profession, such as mortise and tenon joints, halving joints, cut housings; bridle joints; and angle bridle joint	3.65	2.71	1.27	1.22	0.03	S
32. Set off and make framed; ledged and braced doors, and framed louvers	3.72	2.82	1.21	1.20	0.00	S
33. Identification of various types of wood adhesives, abrasives and wood finishes.	3.69	2.67	1.10	1.20	0.00	S
34. Construct wall partition	3.57	2.52	1.17	1.33	0.38	NS
35. Build and dismantle temporary scenery for film making, television and theatre	3.65	2.43	1.33	1.28	0.96	NS
36. Install floor joist, ceiling paneling and interior design.	3.83	2.57	1.10	1.22	0.06	NS
37. Make interior finishes such as moldings, doors, windows, stairs and cupboards	3.67	2.50	1.17	1.08	0.01	S

38. Erect wood skirting in a new building. Skills In Carpentry Works	3.76	3.13	1.16	1.45	0.00	S
39. Fit and fix in doors; windows and architraves	3.56	2.54	1.27	1.34	0.11	NS
40. Set out and construct straight flight stairs	3.71	2.73	1.26	1.30	0.02	S
41. Erect a free standing scaffold in a safe manner	3.72	2.54	1.13	1.25	0.21	NS
42. Have knowledge of framing and naggig for ceilings and walls and the spacing required suiting various materials.	3.44	2.47	1.24	1.25	0.13	NS
43. Locate and construct building geometry (roofs, centre for archies, beams and others).	3.90	2.62	1.13	1.17	0.01	S
44. Ability to set out for small buildings.	3.70	2.60	1.20	1.19	0.11	NS
45. Timbering to trenches and excavation to formwork. Skills in Ornamental Designing	3.82	2.42	1.17	1.21	0.53	NS
46. Design based on elements and principles of good design	3.56	2.67	1.18	1.18	0.01	S
47. Ornamental designs such as inlay, geometrical ornament, using hand tools and woodworking machines	3.83	2.25	1.34	1.23	0.15	NS
48. Carve sculptures of various Objects, Animals, Birds and Human being	3.82	2.35	1.13	1.20	0.30	NS
49. Make ornamental designs and patterns using CNC machines Skills in Machine Woodworking	4.47	1.93	1.13	1.21	0.07	NS
50. Identification modern woodworking tools.	3.70	2.62	1.21	1.31	0.33	NS
51. Observe simple rules in the use of machine and equipment	3.50	2.79	1.37	1.31	0.13	NS
52. Carryout various types of maintenances of wood.	3.47	2.51	1.27	1.25	0.50	NS
53. Use modern powered methods of finishing wood.	3.66	2.41	1.22	1.17	0.57	NS
54. Service and repair tools and equipment used in wood laboratory or workshops.	3.71	2.61	1.13	1.26	0.02	S
55. Take inventories, replacements, installation and dismantling of equipment.	3.65	2.47	1.23	1.19	0.23	NS
56. Install machinery and equipment according to lay out plans, blueprints, and other drawing in Industrial establishment or schools	3.89	2.45	1.25	1.20	0.26	NS
57. Operate CNC lathe, router, drill machines to perform operations such as turning, facing and many other	4.30	1.70	1.11	1.08	0.08	NS
58. Operate glue-size machines	3.72	2.71	1.26	1.30	0.00	S
59. Operate one or more manual or power-fed woodworking machines for surfacing, sizing, joint construction, cutting tongues, groves, bevels, beads or molding patterns.	3.74	2.32	1.21	1.18	0.74	NS
60. Operate band saw machines, circular saws, thicknesser and mortise Skills in Upholstery Making	3.63	3.02	1.28	1.40	0.02	S
61. Construct house and office furniture based on construction techniques.	3.66	2.63	1.17	1.32	0.33	NS
62. Maintain wood furniture and iron mongery and fittings (hinges, locks, handles and others)	3.74	2.64	1.07	1.24	0.00	S
63. Design and construct full cover and half cover upholstery.	3.48	2.58	1.40	1.41	0.05	NS
64. Identification upholstery tools and materials.	3.57	2.73	1.23	1.36	0.29	NS

65. State the principles, techniques and practice of upholstery making such as frame construction, spring padding, hand stitching, sewing and covering using tacks and staples.	3.76	2.56	1.18	1.24	0.09	NS
66. Develop ideas into a line of furniture acceptable to public	3.75	2.39	1.00	1.07	0.00	S
67. Repairs and rebuilds upholstered furniture using hand tools and knowledge of fabrics and upholstery methods.	3.67	2.38	1.20	1.24	0.85	NS
68. Select covering materials considering the colour, pattern and texture.	3.72	2.30	1.12	1.14	0.10	NS

Key: N = Number of Respondents, \bar{x}_1 = Mean of Skill Required, \bar{x}_2 = Mean of Skill Possessed, SD_1 = Standard Deviation of Skill Required SD_2 = Standard Deviation of Skill Possessed, Sig. = Level of Significance, S = Significant, NS = Not Significant.

The table above presents the analyzed outcome on the skill required, skill possessed and the up-skilling needs by woodwork technologists in tertiary institutions in north central, Nigeria.

The skill required shows that the respondents required up-skilling in all 68 items with an average mean of 3.69. However, the mean result ranging from 3.36 to 4.47 as displayed in the table, is an indication that all the presented items are required skills by woodwork technologists and are within the range of moderately required and required levels. Also, the standard deviation outcomes ranged from 1.00 to 1.40, indicated that the technologists have closer opinion in their responses to the items. In other words, the technologists have similar view on the woodwork skills required for optimal performance in their tasks.

The skill possessed by woodwork technologists showed that the respondents possessed skill slightly and moderately, with mean range of 1.70 to 3.13. The average mean of skill possessed by the technologists is 2.55 (moderately possessed). This implies that the respondents possessed some level of skills in woodwork technology that actually made them employable but the skills possessed are very low. The standard deviation on skill possessed ranged from 1.07 to 1.45 which shows that the respondents share similar view on the skill possessed in woodwork technology, this is noted in the closeness of their responses, as indicated by the standard deviations.

The z-test of the mean contrast between the skill required and skill possessed showed that there are significant differences in 23 items. This implies that the respondents have different opinions in their ratings of the items in terms of needs which is an indication that technologists need up-skilling at different levels in 23 items which are 21, 24, 30, 33, 40 among others. While on the other hand, the analysis showed that respondents have similar opinion in 45 items representing 66% of the entire items among which are 48, 49, 53, 57 and 59.

The figure below shows the difference in the mean response of respondents on skill required and skill possessed. It was displayed in the figure that the level of skill required is higher than the level of skill possessed by the technologists. This is an indication that there is need for the technologists to be up-skilled in order to perform optimally in their job.

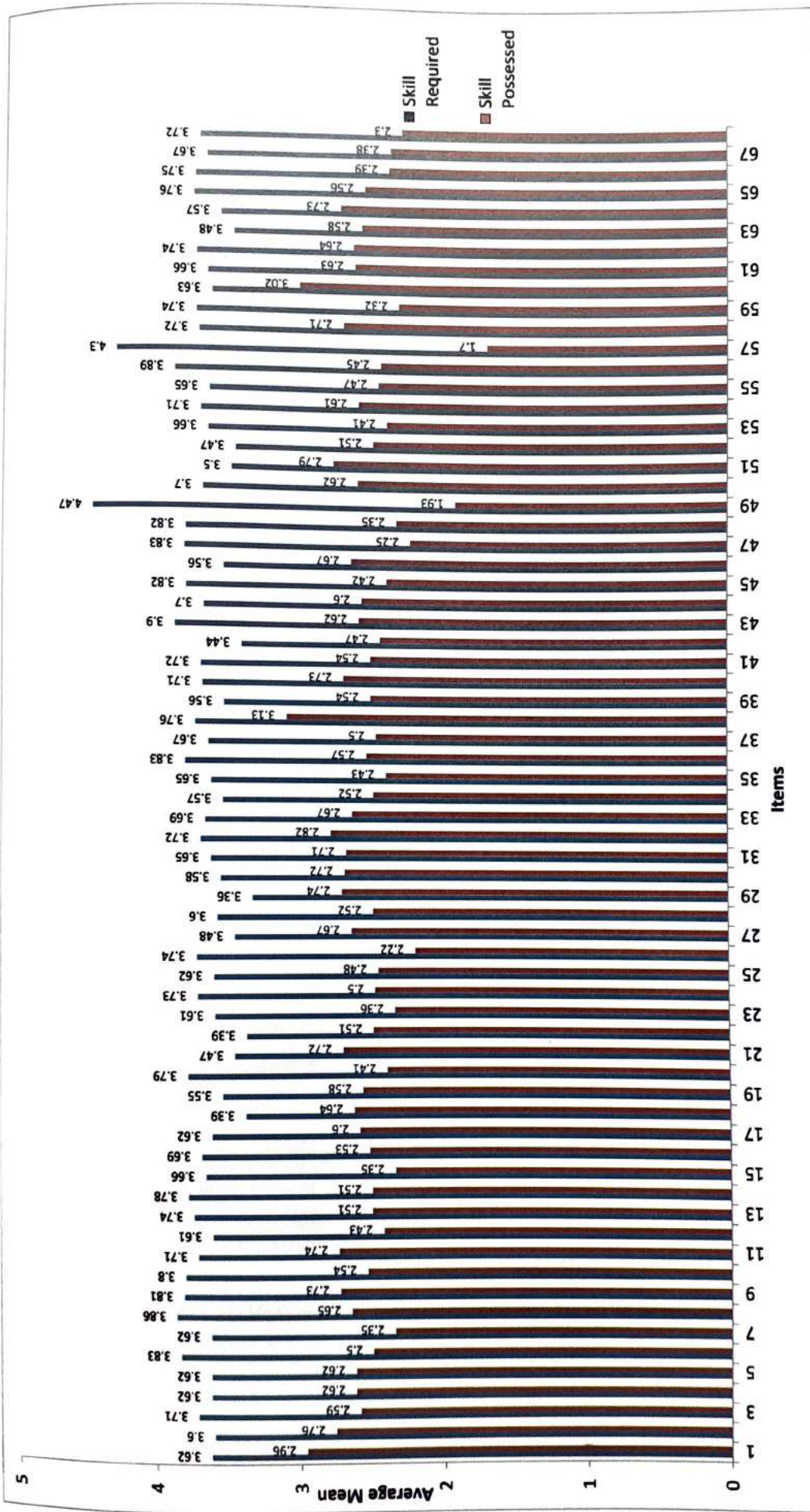


Figure 3: Difference between the Average Mean of Skill Required and Skill Possessed

Discussion of Findings

Findings on skills required by woodwork technologists revealed that technologists require skills in woodwork technology especially on the use of Computer Numerical Control machines (CNC). This finding is in support of Okparake (2004) who highlighted that technologists require safety practice skills in the use of equipment and tools in block laying and concreting. This implies that for technologists to perform optimally, there is need for the technologists to be knowledgeable in the specific skill related to their areas of specialization.

Also, the findings of Olabiyi (2013) is in support of the finding of this study as Olabiyi reported that, though Government and private organizations recognize the importance of skill acquisition by workers, which is a reason for the establishment of technical colleges, but still discovered that a substantial number of technical graduates are lacking in majorly physical skills, dexterity and practical aspects due to the glaring gap between the skill required and the skill possessed by the graduates. The finding further revealed that while there skill shortages, the intensity of skill shortages is high and this is consequently making the level of skill required higher.

Findings on the skills possessed by woodwork technologists revealed that the skill possessed by the respondents is low as compared to skill required by them to perform creditably. This implies that woodwork technologists possesses some level of skills but the skill possessed are not adequate enough to enable them function reasonably in their job and that is why high percentage of graduates who are trained by these technologists are not also practically sound. Okwori, Adamu and Odo (2013) corroborate this finding that woodwork graduates in Niger State possess average level of skills in the use of some woodwork machines except band saw machines, tenoning machine, mortise and thicknesser. It was also highlighted further that the graduates display a good skill in the handling of hand tools such as hammer, screw driver, electrical jig saw, scraper except finishing skills as regards the use of Formica in wood covering. This implies that the graduates actually possess some skills in woodwork technology but lack skills in the usage of new woodwork processing machines and generally new ways of handling practical activities in woodwork. Therefore, these make the need for up-skilling very relevant.

This finding is in support of Erewari (2008), who stated that technical college graduates possessed low technical skills, knowledge and competencies for self-employment therefore the need for technical college graduates to possess relevant technical skills, knowledge and competencies is essential.

Findings of the hypothesis on the up-skilling needs of woodwork technologists in tertiary institutions in North Central Nigeria revealed that there were significant differences in 23 items while 45 items show no significance differences. This shows that the technologists needed up-skilling at different levels in 23 skills among which are designed based on elements and principles of good design, selecting appropriate tools, materials, process and products, making interior finishes such as moldings, doors, windows, stairs and cupboards, location and construction of building geometry, service and repairs of tools and equipment used in wood laboratory or workshops and maintenance of wood furniture, ironmongery and fittings. Therefore, there is need for up-skilling of the technologists in woodwork technology in tertiary institutions of North Central Nigeria. This implies that the development in wood processing, tools and equipment which is as a result of technological development is responsible for the up-skilling need by technologist. This finding is supported by Usman (2014) in his study on the assessment of training and improvement, the study revealed that training and improvement brings about development in staff performance after such training and improvement programmes. This finding is considered very relevant to the present study if woodwork technologists must be up-skilled for better improvement and performance.

Audu, Aede, Yusri, Muhammad and Inti, (2014) substantiates this finding that the teachers of Motor Vehicle Mechanics (MVM) needed to be re-trained so as to enhance their understanding, skills and proficiencies in academic and applied skills so that they can be capable of teaching students efficiently, in order for the students to graduate as knowledgeable craftsmen.

Conclusion

This study, designed to evaluate Up-Skilling Needs of Woodwork Technologists in Tertiary Institutions in North Central, Nigeria using Discrepancy Model. Three research questions were postulated and a null hypothesis which was tested at 0.05 significance level was formulated to guide the study. The research questions assessed skills required and skills possessed by Woodwork technologists, up-skilling needed by woodwork technologists.

Based on the findings of the study, it was concluded that the skill possessed by woodwork technologists in tertiary institutions of North Central Nigeria is low when compared to the level of skill required by the technologists to perform optimally. This justified the fact that woodwork technologists needed to be up-skilled in the tertiary institution of North central, Nigeria.

Recommendations

Based on the findings of the study, the subsequent recommendations were made;

1. The management of each of the institutions under study should use the identified up-skilling needs to organise a separate capacity building workshop for the technologists on the basis of their qualification.
2. The Federal Ministry of Education and other educational stakeholders, such as NUC, NCCE and NBTE should use the identified up-skilling needs to upgrade the curriculum for University, Polytechnics, Colleges of Education and other vocational and technical education institutions.
3. UNESCO-Nigeria Project on Technical and Vocational Education in North Central Nigeria should use the identified up-skilling needs to develop re-training/up-skilling programmes for woodwork technologists.

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