



Interest in Hard and Soft Skills of Technical College Graduates in Fabrication and Welding Engineering Craft Trade in Industries in Northeast, Nigeria.

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Abstract

This study was designed to establish an interest in the hard and soft skills of technical colleges' graduates in fabrication and welding engineering craft trade in industries of the Northeast, Nigeria. The challenges that created the need to embark on this study were the concern amongst industrialists that graduates of technical college programmes lack the required skills needed for employment in the industries. A descriptive survey design was adopted for the study. A total of 215 respondents comprised of 60 technical teachers, 112 technical colleges' graduates and 43 industrial supervisors constituted the population for the study. There was no sampling in the study because the population was manageable. The study premised on two specific objectives based on which two research questions and two null hypotheses were formulated to guide the study. The two null hypotheses were tested at 0.05 level of significance. The instrument used for data collection was validated on the basis of clarity and appropriateness by three experts' lectures Fabrication and welding, Modibbo Adama University of Technology, Yola and also fabrication and welding units in industries. Following suggestions made by experts, modifications were made to the questionnaire. The validated instrument yielded a reliability coefficient alpha of 0.82 obtained using Cronbach Alpha. Means and standard deviations were employed to answer the research questions, while one-way analysis of variance (ANOVA) was used to test the hypotheses and a post hoc test was used to test where difference exists using Statistical package for social sciences (SPSS) version 23 computer software. The results of the study revealed that technical college graduates working in industries have a high interest in hard and soft skills. it was recommended among others that Employees especially technical college graduates in industries should be highly motivated by giving them good remuneration and incentives to arouse their interest for high performance and productivity on the job. Good relations should encourage industrial supervisors and other workers (technical college graduates) in order to be more active on the job.

Keywords: Hard skills, soft skills, industries, technical graduates.

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Introduction

Today's technical college students are expected to learn skill content better in order to fit into twenty-first-century jobs. In doing

so, the students are expected to acquire the work skills necessary so as to be successful in the industry and other sectors of the economy. Work skills according to

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Nwokoye and Okeke (2016) are the human capability to do technical work, efficiently and competently. In the opinion of Nwokike (2014), work skills are practical activities that can help an individual to acquire saleable skills. Coates (2006); Rasul *et al.* (2013), opined that work skill is an ability to perform an act expertly. It is, therefore, the efficiency, expertness and competency displayed successfully in performing a task. Work skills needed by employers include both hard and soft skills (Olubode, 2009, Educational Planners, 2012 & Dagogo, 2014). Hard skills are technical skills which are specific and peculiar to trade, such as fabrication and welding, motor vehicle mechanics, foundry and forging, while soft skills are those skills that enable technical skills to be utilized in solving everyday problems in one's chosen occupation.

Fabrication and welding engineering craft trade at the technical colleges are offered at two levels, leading to the award of National Technical Certificate (NTC) and Advanced National Technical Certificate (ANTC) for craftsmen and master craftsmen respectively (NABTEB, 2015; NBTE, 2001). The curriculum is prepared in modules at both of these two levels. The trainees on completion of the programme for fabrication and welding engineering craft practice, work for himself or for others, like any other vocational education graduate in the technical colleges. According to National Policy on Education (FRN, 2014) technical college graduates shall have three options: secure employment either at the end of the whole course or after completing one or more modules of employable skills; set up their own business and become self-employed and be able to employ others; and pursue further education in advanced craft/technical institutions such as polytechnics, colleges of education (technical) and universities of Technologies. Thus, justifying the objective of the programme.

The National Skills Task Force and Associated Research Studies in Nyapson (2015) made a clear distinction between skills shortage (those due to applicants' lacking required skills, work experience or

qualifications) and internal skills gaps (inadequate proficiency levels within a company's workforce). These make it difficult to fill vacancies which may be taken as evidence of a mismatch in skills supply and demand. Thus, are perceived by employers as closely related to levels of formal training in schools. Nigeria Employers Consultative Association (NECA) according to Nnauko and Okoye (2016) reported a general dissatisfaction with applicants seeking employment in Nigeria industries. NECA noted that applicants for skilled craft jobs lack technical, practical and customer service skills, implying that employers prefer workers who have completed high school and have acquired adequate knowledge in skills and interested in the work. This is because advanced technology is in constant review of developing new ideas, materials, processes and manufacturing techniques that are creating occupations that were not previously in existence.

In industries, according to Dasmani (2011), one of the major factors that influence a worker to hold on the job and progress in the career is "interest". Interest according to Oyenuga (2010) is a motive that leads the learner to learn the skills and knowledge needed in modern technology. Hornby (2010) defines interest as a feeling of wanting to know or learn more about something or somebody; a characteristic that arouses concern or curiosity that holds one's attention. Interest, an aspect of the affective domain (the method that utilizes learning skills which are predominantly related to emotional process) is a construct that has to do with one's readiness to like or dislike something. It could be aroused in an individual by activity that tends to satisfy the individual's needs (Ikechukwu, 2011). Okigbo and Okeke (2011) stressed that interest has direct bearing with a performance for high productivity on the job. This is because interest is a mother of attention, once there is direct interest, attention is guaranteed and learning is assured (Okigbo and Okeke, 2011). That is why, when sciences and technological courses are taught practically using

materials and demonstrations, learners tend to learn better and sustain their interest. It is, therefore, a clear and indisputable fact that teaching and learning activities including that of skills are irrelevant if the needs and interests of the learners are not considered or met.

The graduates' lack of saleable skills and interest especially in fabrication and welding trade maybe perhaps a result of inadequate preparation and motivation from school to the world of work. This attributes according to Oyenuga (2010) has resulted in low productivity and can lead to a poor economy, industrialization, starvation, lack of jobs and peace. The skills acquired by graduates especially technical college graduates were supposed to raise an individual's job prospects and productivity.

Objectives of the Study

The objective of this study is to establish the interest level in the work skills of technical college graduates in fabrication and welding engineering craft trade in industries in North East, Nigeria. Specifically, the study sought to:

1. Determine the Interest in hard skills of technical colleges' graduates in Fabrication and Welding Engineering Craft Trade working in industries.
2. Determine the Interest in soft skills of technical colleges' graduates in Fabrication and Welding Engineering Craft Trade working in industries.

Research Questions

1. What is the Interest' in hard skills of technical colleges' graduates in Fabrication and Welding Engineering Craft Trade working in industries?
2. What is the Interest' in soft skills of technical colleges' graduates in Fabrication and Welding Engineering Craft Trade working in industries?

Hypotheses

HO₁. There is no significant difference in the mean responses of technical colleges' graduates, teachers and industrial supervisors on Interest in hard skills in Fabrication and Welding Engineering Craft Trade working in industries.

HO₂. There is no significant difference in the mean responses of technical colleges' graduates, teachers and industrial supervisors on Interest in soft skills in Fabrication and Welding Engineering Craft Trade working in industries.

Materials and Methods

A descriptive survey research design was adopted for the study. A descriptive survey research design enables researchers to obtain information from people who are considered to be representative of the entire population (Ezekiel *et al.* 2017). The study was carried out in the North Eastern zone of Nigeria. The zone was chosen because it has industries (including medium and small scale) that employ technical graduates from technical colleges within and outside the zone. The total population of the study was 215 people which comprised of 60 technical teachers teaching fabrication and welding crafts trade, 112 technical college graduates working in industries and 43 supervisors in the fabrication and welding unit of 29 industries used for the study. There was no sampling since the population is manageable. Structured questionnaire items based on five points rating scale were used in obtaining information from the respondents. The response categories were Very high (VH)=5, High (H)=4, Moderate (M)=3, Low (L)=2, Very low (VL)=1. The questionnaire was validated by four experts from Modibbo Adama University of Technology, Yola and two from industry to ensure the appropriateness and language of the instrument. The reliability coefficient established from the pilot study carried out outside the study area was 0.81 for hard skills and 0.82 for soft skills. Means and standard deviation and grand means were used to answer the research questions. The decision was based on a real limit of numbers hence, any mean from 3.50 and above is considered 'High' otherwise regarded as 'Low'. The null hypotheses were tested at 0.05 level of

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significance using Analysis of Variance (ANOVA) and Scheffe's (post hoc) test to identify where the difference exists. The decision rule for hypotheses depends on calculated F and tabulated or critical value. When the calculated F is greater than the tabulated or critical value, the null hypothesis was rejected and where otherwise it was upheld.

Results

Research Question 3: *What is the Interests' level in the hard skills of technical colleges' graduates in Fabrication and Welding Engineering Craft Trade working in industries?*

Table 1: Means and Standard Deviations of the Respondents on Interest level in Hard Skills of Technical College Graduates in Fabrication and Welding Engineering Craft Trade in Industries

S/N	Item Statements on Interest level in Hard Skills	Fab. Welding Graduates N =112		Industrial sup. N = 43		Fab. Welding teacher. N=60.		Total N = 215		Remarks
		\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	\bar{X}_3	SD ₃	\bar{X}_G	SD	
1	Working in fabrication and welding company.	4.42	0.95	4.53	0.59	4.35	0.92	4.42	0.88	High
2	Fabrication and welding workshop activities when working with colleagues.	4.54	0.86	4.23	0.87	4.28	0.85	4.40	0.86	High
3	Carrying out group project with colleagues.	4.33	0.84	4.47	0.67	4.12	0.96	4.30	0.85	High
4	Accept extra-work in place of work.	4.27	0.91	3.58	0.93	3.78	0.04	4.00	0.99	High
5	Machines operations in fabrication and welding industry.	4.34	0.97	4.40	0.79	4.02	0.97	4.26	0.95	High
6	Further training in field of fabrication and welding trade courses.	4.32	1.06	4.44	0.73	4.38	0.92	4.36	0.96	High
7	Cutting Sheetmetal for welding operation	4.26	1.03	4.00	1.00	3.77	1.13	4.07	1.07	High
8	Observing safety rules and regulations in fabrication and welding trade industry	4.22	1.10	4.21	0.97	4.02	1.11	4.16	1.08	High
9	Repair and maintenance of welding machine in industry.	4.21	1.11	3.95	1.02	3.65	1.04	4.00	0.99	High
10	Choice of fabrication and welding option to any other options in vocational trade.	4.29	0.99	4.05	0.82	3.98	1.08	4.16	0.99	High
	Total Grand Mean (\bar{X}_G)	4.33	0.98	4.19	0.84	4.04	1.00	4.20	0.94	High

Key: \bar{X}_1 , SD₁ and N₁= Means, Standard Deviations and Sample Size of Fabrication and Welding Graduates.

SD= Grand Total of Standard Deviations

\bar{X}_2 , SD₂ and N₂ = Means, Standard Deviations and Sample Size of Industrial Supervisors.

\bar{X}_G = Total Grand Means

\bar{X}_3 , SD₃ and N₃= Means, Standard Deviations and Sample Size of Technical Teachers.

Results in Table 1 indicate the means and standard deviations of fabrication and welding graduates, industrial supervisors and technical teachers on the interest level in hard skills. The result revealed that respondents had a high interest in the ten structured items since all the means ratings were above 3.50 cut-off point. The grand

means and standard deviations ranging from 4.42 to 4.00 and 0.88 to 0.99 respectively. This means that respondents were of the view that working in fabrication and welding industries is the most interesting among the items, while, accepting extra-work in the working place and maintenance of welding machines in industries are the

least interest among the ten items on interest level in hard skills.

Research Question 2: *What is the Interests' level in soft skills of technical colleges'*

graduates in Fabrication and Welding Engineering Craft Trade working in industries?

Table 2: Mean and Standard Deviation of the Respondents on Interest level in Soft Skills of Technical College Graduates in Fabrication and Welding Engineering Craft Trade in Industries

S/N	Item Statements on Interest Level in Soft Skills	Fab. Welding Graduates N = 112		Industrial sup. N = 43		Fab. Welding teacher, N = 60		Total N = 215		Remarks
		\bar{X}_1	SD ₁	\bar{X}_2	SD ₂	\bar{X}_3	SD ₃	\bar{X}_G	SD	
1	Supervisors attention to workers need when working together.	4.58	0.77	4.63	0.58	0.12	0.76	4.47	0.76	High
2	Participation in seminars and workshops in fabrication and welding industry.	4.28	0.95	4.51	0.77	0.37	0.69	4.35	0.85	High
3	Expression of innovative ideas to colleagues at work in industry.	4.45	0.81	4.51	0.67	4.22	0.72	4.40	0.77	High
4	Contributions of fabrication and welding to the company.	4.40	1.00	4.37	1.02	4.22	0.96	4.34	0.99	High
5	Fairness of supervisors in arousing interest to work harder.	4.41	1.05	4.42	0.63	4.12	1.17	4.33	1.02	High
6	Consistency of supervisors in arousing interest to work harder.	4.47	0.86	4.47	1.03	4.33	0.84	4.44	0.89	High
7	Conducive nature of the company for work.	4.46	0.92	4.23	0.68	4.15	0.92	4.33	0.88	High
8	Regular payment of salaries to workers	4.10	1.01	3.67	1.04	4.03	1.02	4.00	1.03	High
9	Learners interest in fabrication and welding trade.	4.17	1.06	3.98	0.99	3.82	1.00	4.03	1.04	High
10	Working in industries improve career progression.	4.24	0.99	4.56	0.70	3.47	1.39	4.09	1.16	High
11	Supervisors never assist in problem-solving in fabrication and welding industry.	4.71	1.44	2.37	1.43	3.69	1.25	3.25	1.48	Moderate
Total Grand Mean (\bar{X}_G)		4.30	0.99	4.17	0.87	4.05	0.98	4.20	0.95	High

Key: \bar{X}_1 , SD₁ and N₁= Means, Standard Deviations and Sample Size of Fabrication and Welding Graduates.

SD= Grand Total of Standard Deviations

\bar{X}_2 , SD₂ and N₂ = Means, Standard Deviations and Sample Size of Industrial Supervisors.

\bar{X}_G = Total Grand Means

\bar{X}_3 , SD₃ and N₃= Means, Standard Deviations and Sample Size of Technical Teachers

Table 2 indicates the mean responses and standard deviations of fabrication and welding graduates, industrial supervisors and technical teachers on interest level in soft skills. The respondents rated items 1-10 high and item 11 moderate by teachers and low by industrial supervisors with grand means and standard deviations ranging from 4.47 to 3.25. The result revealed that technical college graduates in industries rated all the eleven structured items high.

While technical teachers rated ten items high and rated item no. 10 moderate which means teachers did not believe whether there is career progression in working in industries. However, industrial supervisors rated item 11 low, meaning that supervisors do assist in problem-solving and not as graduates claimed.

This implies that technical college graduates working in industries were interested in soft skills and claimed on item 11 that their

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supervisors do not assist them in problem-solving during operations on the job. Contrary to that, industrial supervisors' responses showed that they assist in problem-solving during operations.

Hypotheses

Hypothesis 1: There is no significant difference in the mean responses of technical colleges' graduates, teachers and industrial supervisors on interests in hard skills of graduates in fabrication and welding engineering craft trade working in industries.

Table 3: One-Way Analysis of Variance (ANOVA) on Interest level in Hard Skills of Graduates in Fabrication and Welding Engineering Craft Trade Working in Industries

Source of Variance	SS	Df	MS	F-cal.	F-critical	Remark
Between Groups	0.43	2.00	0.21	4.20	3.35	Significant
Within Groups	1.38	27.00	0.05			
Total	1.81	29.00				

Table 3 showed that the F-calculated was 4.20 while, the F-critical was 3.35 with a degree of freedom of 29. Based on this fact, the null hypothesis was rejected since the F-calculated was greater than F-critical. Hence, there was a significant difference in the mean responses of the respondents on interest level in hard skills of graduates in

fabrication and welding engineering craft trade working in industries. This means that the opinion of the three categories of respondents was not the same on interest level in hard skills. Post Hoc test was carried out within the groups as shown in table 4 below.

Table 4: Post Hoc Test of Mean Responses of Technical College Graduates, Teachers and Industrial Supervisors on Interest level in Hard Skills Needed by Technical College Graduates in Industries

S/N	Group	F-calculated	Remark
i	Tg and Is	6.09 < 6.70	
ii	Tg and Tt	32.86 > 6.70*	Significant
iii	Is and Tt	5.64 < 6.70	

Key: Technical Graduate =Tg

Industrial Supervisors=Is

Technical Teachers=Tt

Table 4 shows a post hoc test of mean responses of technical college graduates, teachers and industrial supervisors on interest level in hard skills. Since the group, technical college graduates and technical teachers differ significantly while, industrial supervisors and technical teachers are not, technical college graduates were the group showing the major difference. This may be a result of exposure in the place of work compared to other respondents and that is

why their mean was higher than others. Hence technical college graduates working in industries have a high-interest level in hard skills. The result of the Post Hoc revealed that technical colleges' graduates were found responsible for the difference (Fs 32.86 > 6.70) see Appendix H for details.

Hypothesis 4: There is no significant difference in the mean responses of technical colleges' graduates, teachers and

industrial supervisors on interests' level in soft skills of graduates in fabrication and

welding engineering craft trade working in industries.

Table 5: One-Way Analysis of Variance (ANOVA) on Interest level in Soft Skills of Graduates in Fabrication and Welding Engineering Craft Trade Working in Industries

Source of Variance	SS	Df	MS	F-cal.	F-critical	Remark
Between Groups	0.35	2.00	0.17	0.88	3.32	Not Significant
Within Groups	5.92	30.00	0.20			
Total	6.27	32.00				

Table 5 showed that the F-calculated was 0.88, while the F-critical was 3.32 with degrees of freedom of 32. Based on the fact that the F-calculated is less than the F-critical, the null hypothesis was therefore accepted. This indicates that there was no significant difference in the mean ratings of the three categories of respondents. The result revealed that technical colleges' graduates, teachers, and industrial supervisors have the same opinions on interest level in soft skills of fabrication and welding engineering craft trade graduates working in industries. Post Hoc test was not necessary here because there was no significant difference among the respondents' group.

Discussion

The finding on interest level in hard skills of technical colleges' graduates in fabrication and welding in research question one revealed that all the 10 item statements were rated very high to high by the respondents. This implies that graduates of fabrication and welding working in industries are interested in their jobs. Similarly, the finding in research question four on interest level in soft skills of graduates in fabrication and welding on statements item 11 by the respondents revealed that all the technical graduates working in industries have shown high interest in soft skills. The findings on interest level in hard and soft skills agreed with the findings of Okigbo and Okeke (2011) that interest has direct bearing with performance perfection in any activity and one is likely to be more deeply involved, hence, attention is guaranteed and perfection in the learner is assured. Dasmani (2011)

noted that one of the major factors that influence a worker to hold on the job and progress in the career is interest. This means that once there is interest in a worker, the worker would have a motive to perform well in his/her job.

Furthermore, the opinions of graduates working in industries and their supervisors differ from technical teachers on item statement 11, that graduates and their supervisor in industries believed that working in industries improves career progression contrary to that, technical teachers disagreed with the statement. This reason may be connected to the graduates not been granting an opportunity for further training to acquire a higher qualification in their place of work. This finding is in line with Nigeria Employers Consultative Association (NECA) in Nnauko and Okoye (2016) that employers prefer workers who have completed high school and have adequate knowledge in skills at the workplace. On the other hand, industrial supervisors agreed on item statement 11 in table 4 that they assist in problem-solving in any fabrication and welding activities, while technical graduates in industries and their supervisors disagreed.

The null hypothesis one (H_{01}) was rejected, this is because the F-calculated (4.20) was greater than F-critical (3.35). Therefore, there was a significant difference in the mean responses of the technical college graduates, teachers and industrial supervisors on interest level in hard skills of technical colleges' graduates in fabrication and welding engineering craft trade working in industries.

The post hoc (scheffes) test result revealed that technical college graduates were the source of the difference. This implies that technical college graduates working in industries needed a high interest in hard skills. The finding agrees with Okigbo and Okeke (2011) that interest has direct bearing with the performance for high productivity on the job.

The null hypothesis two (HO₂) indicated that F-calculated was 0.88, less than F-critical of 3.32. This implies that the null hypothesis was accepted. Hence, there is no significant difference in the mean responses of technical colleges' graduates, teachers and industrial supervisors on interest in soft skills of graduates in fabrication and welding craft trade working in industries.

Conclusion

The findings of this study serve as the basis for drawing the conclusions which stakeholders in government, industries, and academia especially technical colleges that trained these graduates for employment in industries and other sectors of the economy should consider as a matter of concern. As established in the study that technical colleges' graduates in industries have a high level of interest in hard and soft skills. The null hypothesis on interest in hard skills was rejected, implying that there was a significant difference in the mean ratings of technical college graduates, industrial supervisors and technical teachers on interest level in hard skills. Which means that the three independent groups' perceptions on interest level in hard skills were not the same. Whereas, the null hypothesis on interest in soft skills was accepted, meaning that there was no significant difference in the mean ratings of all the respondents. This can be concluded that interest motivates workers to put in their best for high productivity at work.

Recommendations

The following recommendations were made based on the findings of the study:

- i. Employees especially technical college graduates in industries should be highly motivated by giving them

good remuneration and incentives to arouse their interest for high performance and productivity on the job.

- ii. Good relations should encourage industrial supervisors and other workers (technical college graduates) in order to be more active on the job.
- iii. Management of industries should allow their employees for further training on the job in order to derive high interest for better performance on the job and curtail the risk of sacking.

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