

COMPETENCIES AND SKILLS REQUIRED BY METALWORK TECHNOLOGY GRADUATES FOR ENTREPRENEURSHIP DEVELOPMENT IN COLLEGES OF EDUCATION IN LAGOS AND OGUN STATES, NIGERIA

BY

DAWODU RASHEED ADEGBENRO Ph.D & OGUNBOTE, SHEFIU Ph.D
DEPARTMENT OF TECHNOLOGY EDUCATION

LAGOS STATE UNIVERSITY OF EDUCATION, OTO/ IJANIKIN, LAGOS STATE, NIGERIA.

Abstract

This study is designed to examine the competencies and skills required by metalwork technology graduates for entrepreneurship development in Colleges of education in Lagos and Ogun states, Nigeria. Three research questions were raised in line with the three purposes of the study and three null hypotheses formulated guided the study. These null hypotheses were tested at the probability of 0.05 level of significance. The study adopted a descriptive design. The population comprised of 60 metalwork graduates and 20 metalwork technologists in the two Nation Commission for Colleges of Education (NCCE) accredited Colleges of Education in Lagos and Ogun States. A 45 items structured instrument with four response options was used for data collection and was validated by three experts in the department of Science and Technology Education from the University of Lagos, Akoka Lagos State. The instrument was pilot tested on 10 respondents at the Emmanuel Alayande College of Education, Oyo, Oyo State who are not part of the population and reliability coefficient obtained was 0.81 using Cronbach Alpha coefficient formula. Eighty copies of the questionnaire were distributed, correctly completed and returned. The mean and standard deviation were used to answer the research questions while Z-test statistic was also used to test the hypotheses. Any mean score of 2.50 and above were regarded as required while items with mean below 2.50 were regarded as not required. The findings of the study revealed that all the listed items on Metalwork technology competencies and skills are required by graduates in colleges of education to enter into gainful employment and self-reliance in Lagos and Ogun States. Also, government should encourage with loan the metalwork practice graduates who have acquired competencies in metalwork skills to go into small scale business after graduation as this will support government's drive in reducing unemployment and empower the graduates to survive in the world of work.

Keywords: Competencies, Skills, Metalwork Technology, graduates, Entrepreneurship Development, Colleges of Education

Introduction

Metalwork technology education is one of the components of technical education with emphasis on practical skills, application of scientific knowledge, teaching methodologies to meet the demand for skilled manpower-needs created in this programme taught at the colleges of education level. The mission of technology education according to Udo (2014) is the creation of employment opportunities with technological knowledge, practical skills, attitudes and good work habits in the correct proportion and at the right time and place to enhance national productivity and promote national development.

This implies that metalwork technology education in this century is to produce self-reliant and self-productive metalwork technology graduates with entrepreneurial initiatives and high level of knowledge of practical skills in different specialized areas of metalwork such as machining, foundry, welding and fabrication among others. The ability to be independent is the competence of securing gainful employment and earning a viable livelihood. Fortunately, for metalwork technology education graduates, the curriculum at colleges of education are designed with enough specialized areas that can make them to become gainfully employed or self-reliant if they are well-trained in practical and entrepreneurial skills. A metalwork technology education graduate can become a professional technical teacher, factory worker or self-reliant by establishing a workshop for the production of metal products, turning machine parts among other. One can also establish extra mural classes for teaching metalwork practical and theory to students in technical education field.

It is therefore important that the metalwork technology graduates should possess the competency skills to effectively perform the task. Competency is best described as knowledge, skills, attitude and judgement which required in order to perform successfully at a specified programme. Gana (2007) in Onoh and Moses (2015) stated that entrepreneurial competences include managerial, financial, marketing and communication competencies for effective management of metalwork business to survive. This implies that the success of any business venture in metalwork depend on the ability to perform a task perfectly through the acquired training in a particular programme which is measured against a standard. In this study, competency is the scientific knowledge, practical skills and attitude required of metalwork technology. This alluded to the fact that metalwork graduates must possess the requisite qualification of both manipulative, managerial, communicative skills and other knowledge that can enable for them to perform effectively.

At the colleges of education level, metalwork technology is cited as one of technical education programme skills taught at this level which includes machine shop practice skills, welding skills, fabrication skills, forging skills, machining skills, foundry practices skills among others (Oranu, Nwoke, Ogwo as cited in Emmanuel & Anyo, 2015). According to Cranmer (2014) skill is an ability and capacity acquired through deliberate, systematic and sustained effort to smoothly and adaptively carryout complex activities or job functions involving ideas (cognitive skill) things (technical skills) and/or people (interpersonal skills). Technical skills are skills expertise or technical competence related to the field of the worker, whether engineering or technical education (Medina, 2011). In this regard, Yakubu (2014) stated that the importance of metalwork to everyday life and the overall objective of vocational and technical education, that offers training in skill for self-employment and for employment into the world of work, has made metalwork become an important programme to be taught to students at colleges of education level. Therefore, for the students to be trained in metalwork technology skills for self-reliance, self-sufficiency, self-productive and for employment in the world of work, they require the relevant technical skills in the programme.

Entrepreneurship according to Aluwong (2004) is all about creating employment opportunity for self-reliance, self-sufficient and self-productive, which involves identification of a market and mobilizing necessary resources to serve that market through a business enterprise. In the same vein, NDE in Aliyu, (1997) defined Entrepreneurship as the art which involves recognizing a business opportunity, mobilizing resources and persisting to exploit that opportunity. In the 21st century metalwork technology graduates should be well equipped not only with the required scientific knowledge and technical skills but also with entrepreneurial skills such that on graduation they can establish businesses of their own. The inclusion of entrepreneurship education in the Nigeria Certificate in Education (NCE) curriculum is a drive and determination of both past and present governments of Nigeria to address the increasing incidence of graduate unemployment, the goal of entrepreneurial skills is to prepare students towards creating business enterprise for self-reliance if opportunity to secure wage

earning jobs become inaccessible (Akale, 2004). This is infecting on the scarcity of government paid-jobs that metalwork education students at NCE level now offer entrepreneurship as a compulsory course. The graduates are therefore, groomed in such a way that they can start up a business on their own, then use the acquired knowledge of entrepreneurship to manage and progress in chosen business successfully. The idea is to combine the training of entrepreneurship in addition to the usual skills training of metalwork technology education. Without the required practical skills in metalwork technology, the graduates are not likely to succeed even when encouraged. A great metalwork technology entrepreneur must be able to effectively communicate, sell, focus, learn, and strategize. An ability to continuously learn is not just a key entrepreneurial skill, but also a very valuable life skill. Growing a business requires a sound strategy based on inherent business sense and skills. It has become imperative that institutions of higher learning which adopt global best practices in imparting scientific knowledge and practical skills to students remain at the forefront of technological development. Suffices to say that the NCE curriculum for metalwork technology is not structure to be functional because the teaching and learning of the programme does not replicate global best practices. Therefore, for curriculum to be functional and result oriented should be reckoned the teaching and learning of technical education institutions must be made effective. Several studies (Sowande, 2002; Yakubu, 2014; Ede and Ariyo, 2014) revealed that metalwork technology students upon graduation from colleges presently finding it difficult to perform in skill areas particularly in using modern machines and equipment such as computer numerical control (CNC) machines, advanced welding techniques among others. This may due to several reasons which include the use of obsolete machines and equipment, poor methodology, incompetency of teacher to cope with new technology trend, students study habit and attitude among others. To effectively train the students in the use of computer numerical control machines and equipment, the metalwork technology teachers must possess the relevant technical skills and knowledge which are different from the usual conventional technical skills already possess. Hence, the study is determined to examine the competencies and skills required by metalwork technology graduates for entrepreneurship development in Colleges of education in Lagos and Ogun states, Nigeria.

Statement of the Problem

National Commission for Colleges of Education (NCCE, 2013) recognized the fact that technical education would provide training and impart the scientific knowledge and practical skills to technical education students who have completed the NCE programmes should be able to become self-employed and possibly employ others. To achieve the above stated objective, colleges of education metalwork technology students need to acquire relevant practical technical skills, scientific knowledge and entrepreneurial skills that will guarantee job opportunity upon graduation. Yakubu (2014) stated that one major challenge facing metalwork technology students upon graduation is the lack of competent knowledge and practical technical skills that will enhance productivity. Graduates of technical education who are supposed to be employers of labour are now job seekers and roaming the streets (Ehimen & Ezeora, 2018). The defects in academic curriculum that prepares students does not functional which has little or no jobs related skill and practical training contents. Ehimen and Ezeora further stated that in many cases, many technical education graduates compensate for the poor preparation by undergoing practical trainings in different private technical workshops and others who cannot afford the cost of this training end up not becoming self-employed thus increasing the number of unemployed graduates roaming the street in search for jobs that is not available. The skills taught are as a result what was embedded in the NCCE curriculum used in teaching the students. However, it is a well-known fact that if the relevant practical technical and entrepreneurial skills are imparted in metalwork technology students, it will enable them become job creator, self-sufficient, self-productive, self-reliant, contribute to economic development of the nation and in turn unemployment

would be minimised. Therefore, the problem of the study is to examine the competencies and skills required by metalwork technology graduates for entrepreneurship development in colleges of education in Lagos and Ogun States, Nigeria?

Purpose of the Study

The purpose of the study is to determine the competencies and skills required by metalwork technology graduates for entrepreneurship development in colleges of education in Lagos and Ogun States, Nigeria. Specifically, the study sought to:

1. Competencies required by metalwork technology graduates for entrepreneurship development in Lagos and Ogun States
2. Practical Skills required by metalwork technology graduates for entrepreneurship development in Lagos and Ogun States
3. Challenges facing the acquisition of metalwork technology skills required by graduates of colleges of education in Lagos and Ogun State, Nigeria

Research Questions

1. What are the competencies required by metalwork technology graduates for entrepreneurship development in colleges of education in Lagos and Ogun States Nigeria?
2. What are the Practical skills required by metalwork technology graduates for entrepreneurship development in Lagos and Ogun States Nigeria?
3. What are the Challenges facing the acquisition of metalwork technology skills required by graduates of colleges of education in Lagos and Ogun States, Nigeria?

Hypotheses

The following null hypotheses guided the study at 0.05 level of significance;

H01. There is no significant difference between the mean scores of competencies required by metalwork technology graduates and technologists for entrepreneurship development in Colleges of Education in Lagos and Ogun States, Nigeria.

H02. There is no significant difference between the mean scores of Practical skills required by metalwork technology graduates and technologists for entrepreneurship development in Lagos and Ogun States Nigeria.

H03. There is no significant difference between the mean scores of challenges facing the acquisition of metalwork technology skills by graduates and technologists for entrepreneurship development in Lagos and Ogun States Nigeria.

Methodology.

A survey research design was used in this study. According to Ehimen and Ezeora (2018), a survey research design is one in which a group of people or items are studied by collecting and analysing data from only a representative of the entire population. The study was carried out in two accredited colleges of education Lagos and Ogun States Nigeria. The entire population was relatively small and manageable. Hence, 60 metalwork technology graduates constitute the sample size. Metalwork Technology Skills for Entrepreneurship Development (MWTED) questionnaire was the instrument used to gather data in the study. The MWTED was structured based on 4 – point scale of highly required (HR), moderately required (MR), slightly required (SR) and not required (NR) with corresponding numerical values of 4,3,2 and 1 point respectively. The questionnaire was validated by three experts in the Department of Vocational and Technical Education of Tai Solarin University of

Education, Ogun State. Cronbach Alpha coefficient formula was used to determine the internal consistency of the instrument and the reliability coefficient value obtained was 0.85, indicates a high reliability coefficient for the study. 60 copies of questionnaire were completely filled and retrieved on spot by the researcher. Research questions were analysed with mean and standard deviation while hypothesis was tested with z-test statistics at 0.05 level of significance. The decision rule indicates that the mean real limit equal and above 2-50 was regarded as required. While the mean real limit below was regarded as not required.

Results

Research Question One

What are the competencies required by metalwork technology graduates for entrepreneurship development in Lagos and Ogun States?

Table 1: Mean with Standard deviation on the Competencies required by Metalwork Technology graduates for entrepreneurship development in colleges of education in Lagos and Ogun States

S/N	Competency Skills	Graduates		Technologists		Overall		Rmk
		X	SD	X	SD	X	SD	
1.	Competency to identify the properties and uses of various metals for production Required	3.23	0.93	3.40	0.68	3.32	0.81	
2.	Competency to understand the characteristics of metals Required	3.38	0.99	3.70	0.80	3.54	0.90	
3.	Competency to identify classes of metalwork tools and how to use them Required	3.75	0.60	3.35	0.93	3.55	0.77	
4.	Competency to construct welding joints Required	3.23	0.89	3.85	0.49	3.54	0.69	
5.	Competency to apply safety tools and Measures Required	3.27	0.86	3.30	0.92	3.29	0.89	
6.	Competency to classify ferrous and non-ferrous metals and its uses	3.18	0.79	3.60	0.68	3.39	0.74	Required
7.	Competency to demonstrate the use of CNC lathe machine and its maintenance	3.43	0.87	3.40	1.14	3.42	1.01	Required
8.	Competency to use various types of reamers And milling machine Required	3.50	0.77	3.80	0.62	3.65	0.70	
9.	Competency to weld using Oxy/acetylene equipment Required	3.12	0.81	3.95	0.22	3.53	0.52	
10.	Ability to know welding defects	3.25	0.73	4.00	0.00	3.63	0.37	Required
11.	Competency to operate CNC Lathe machines	3.18	0.95	3.75	0.44	3.47	0.70	Required

12. Competency in CNC periodic maintenance Required	3.27	0.82	3.90	0.31	3.59	0.57
13. Ability to study and interpret production Drawings Required	3.27	0.82	3.55	0.83	3.41	0.83
14. Competency to operate advanced welding for structural works Required	3.45	0.63	3.55	0.99	3.50	0.81
15. Competency to carry out foundry and forging Operations Required	2.92	0.96	3.10	1.07	3.01	1.02
Cluster Mean and Standard deviation Required	3.30	0.83	3.61	0.49	3.68	0.76

Table 1 revealed that all the 15 items had their overall mean Result show that both metalwork technology graduates and technologists that facilitate knowledge and competency skills in metalwork technology agreed that all the variables highlighted are the relevance of competencies required by graduates for entrepreneurship development. This is evidenced in the grand mean score of 3.30 for graduates and technologists 3.61, which are both greater than 2.50 which is the acceptable mean value. Also, the closeness in the standard deviation for both groups, 0.83 and 0.49 respectively, shows homogeneity in the response of both groups. This is in consonance with Okwelle, Idibia and Aje (2022) that acquisition of appropriate skill abilities and competencies both mental and physical are required by all graduates of technical education to progress in a chosen career and contribute to the development of their area of specialty and the society at large. It equips individuals to be self-reliant and it makes them feel fulfilled in securing a means of livelihood.

Hypothesis One.

There is no significant difference between the mean scores of competencies required by metalwork technology graduates and technologists for entrepreneurship development in Colleges of Education in Lagos and Ogun States, Nigeria.

Table 2: t-test summary of analysis of significant difference between the mean response of metalwork technology Graduates and technologists on competencies required for entrepreneurship development in colleges of education in Lagos Ogun states, Nigeria

Variables	N	X	SD	df	t-cal	t-crit	Decision
Graduates	60	49.43	12.42	78	-1.72	1.96	Required
Technologists	20	54.20	10.12				

The data presented in table 2 showed a computed t-cal of -1.72 which indicated that t-cal is less than t=crit value of 1.96 at 78 degree of freedom, hence the null hypothesis is significant. The metalwork technology graduates and technologists have uniform opinion on ability to display competencies and scientific knowledge required by metalwork technology graduates and technologists for entrepreneurship development in colleges of education in Lagos and Ogun states, Nigeria

Research Question Two

What are the practical skills required by metalwork technology graduates for entrepreneurship development in Lagos and Ogun States, Nigeria?

Table 3: Mean with standard deviation on practical skills required by metalwork technology graduates for entrepreneurship development in Lagos and Ogun States, Nigeria.

S/N	Practical Skills	Graduates		Technologists		Overall		Rmk
		X	SD	X	SD	X	SD	
1.	Skill to identify of properties of metals and its uses for production Required	3.42	0.96	3.00	1.08	3.21	1.02	
2.	Skill to apply the characteristics of metals for Production Required	3.33	0.75	3.25	0.85	3.29	0.80	
3.	Technique to use various classes of metals tools for production Required	3.27	0.82	3.45	0.88	3.36	0.85	
4.	Skill to construct welding joints and where the are applicable Required	3.43	0.70	3.20	1.06	3.32	0.88	
5.	Technique to use safety tools and when to apply the measure Required	3.32	0.75	3.50	0.89	3.41	0.82	
6.	Knowledge to use ferrous and non-ferrous metals for production Required	3.42	0.81	4.00	0.00	3.71	0.41	
7.	Skill to operate CNC machines and its routine Maintenance Required	3.46	0.59	3.70	0.66	3.58	0.63	
8.	Skill to use various types of reamers and machine Required	3.55	0.75	3.50	0.89	3.53	0.82	
9.	Technique to operate oxy/acetylene equipment Required	3.47	0.96	3.85	0.49	3.66	0.73	
10.	Skill to detect welding defects and its treatment Required	3.40	0.79	3.60	0.82	3.50	0.81	
11.	Technique to operate CNC Lathe machine Required	3.48	0.77	3.95	0.22	3.72	0.50	
12.	Skill in CNC period maintenance	3.37	0.71	3.70	0.80	3.54	0.76	Required
13.	Technique to construct with the production drawing accurately Required	3.30	0.82	3.25	0.85	3.28	0.84	
14.	Skill to operate advanced welding for structural works Required	3.40	0.89	3.40	1.05	3.40	0.97	

15.Skill to accurately carry out forging and foundry Required	3.40	0.89	3.10	1.07	3.25	0.98
Cluster Mean and Standard Deviation Required	3.40	0.80	3.50	0.77	3.45	0.79

Results in Table 3 above show that both Graduates and technologists of practical skills and knowledge in metalwork technology agreed that the items highlighted are some of the metalwork operational skills required by graduates in colleges of education to function effectively in industry or establish metalwork enterprise. This is proved in the cluster mean score of 3.40 for graduates and 3.50 for the technologists of metalwork which are greater than 2.50, the acceptable mean value. Also, the standard deviation for both graduates 0.80 and 0.77 technologists respectively, shows homogeneity in the response of both graduates and technologists. This is in line with the view of Ajie, Osoh & Thomas (2021); accurate skills in mounting Lathe cutters, skills to accurately adjust the saddle at either direction, ability to be used to the Lathe and metalwork machines operational principles, skills to machining flat curves, or irregular surfaces by feeding the work piece against a rotating jaw chuck containing work piece, skills to identifying faults in a motor driven head stock of the Lathe machine, skills to differentiating left hand and right hand movements of the saddle and the skill of mounting cutting tools at the tool post, skills to identifying materials used for the productions, skills on the correct use tools and so on.

Hypothesis Two

There is no significant difference between the mean response on practical skills required by metalwork technology graduates and technologists for entrepreneurship development in colleges of education in Lagos and Ogun states, Nigeria

Table 4: t-test summary of analysis of significant difference between the mean response metalwork technology graduates and technologists on practical skills required for entrepreneurship development in colleges of education in Lagos and Ogun states, Nigeria

Variables	N	X	SD	d.f	t-cal	t-crit	Decision
Graduates	60	51.02	11.96	78	-0.45	1.96	Required
Technologists	20	52.45	212.06				

The result of the data presented in table 4 showed a computed t-cal of -0.45 which indicated that t-cal is less than t-crit. Value of 1.96 at 78 degree of freedom, hence null hypothesis is significant. The metalwork graduates and technologists have uniform opinions on practical skills and acquired entrepreneurial skills to establish, manage and progress in metalwork enterprises for entrepreneurship development in colleges in education in Lagos and Ogun states, Nigeria.

Research Question 3

What are the challenges facing the acquisition of metalwork technology skills by graduates for entrepreneurship development in Lagos and Ogun States, Nigeria?

Table 5: Mean with standard deviation on Challenges facing the acquisition of metalwork technology skills by graduates for entrepreneurship development in Lagos and Ogun States, Nigeria.

S/N	Challenges of Metalwork Skills Acquisition	Graduates		Technologists		Overall		Rmk
		X	SD	X	SD	X	SD	
1.	Lack of adequate funding by government	3.60	0.96	3.20	0.83	3.35	0.90	Required
2.	Poor attitude of the society to technical Education		3.25	0.98	3.70	0.66	3.48	0.82
	Required							
3.	Lack of CNC machines and equipment	3.17	1.04	3.50	0.89	3.34	0.97	Required
4.	Lack of knowledge of advanced welding Machine	3.33	0.75	3.35	1.04	3.34	0.90	Required
5.	Lack of steady power supply to workshop	3.42	0.96	3.40	1.05	3.41	1.01	Required
6.	Poor image of technical education	3.42	0.77	3.45	0.76	3.44	0.77	Required
7.	Lack of professionally competent personnel	3.25	0.73	3.95	0.22	3.60	0.48	Required
8.	Lack of entrepreneurial skills development	3.32	0.75	3.85	0.49	3.59	0.62	Required
9.	Lack of motivation and incentives for teachers and students	3.47	0.81	3.55	0.99	3.51	0.90	Required
10.	Low students interest in technical education	3.67	0.48	3.35	0.81	3.51	0.65	Required
11.	Curriculum not practical oriented	3.28	0.78	3.85	0.37	3.57	0.58	Required
12.	Lack of instructional materials	3.42	0.77	3.55	0.89	3.49	0.83	Required
13.	Lack of CNC Lathe machine	3.37	0.84	4.00	0.00	3.69	0.42	Required
14.	Inadequate provision of consumable materials for practice by students	3.45	0.77	3.60	0.88	3.53	0.83	Required
15.	Lack of well-equipped modern workshop	3.50	0.72	3.50	0.89	3.50	0.81	Required
Cluster Mean and Standard Deviation		3.40	0.81	3.59	0.72	3.49	0.71	Required

Data in table 5 showed that metalwork graduates had a cluster mean of 3.40. and standard deviation of .081. while the technologists also had cluster mean of 3.59 and standard deviation of 0.72 on Challenges facing the acquisition of metalwork technology skills by graduates for entrepreneurship development in colleges of education in Lagos and Ogun States, Nigeria. The standard deviation showed the homogeneity in the respondents' opinion. This indicated that both respondents agreed that lack of innovative skills, technical skills, managerial skills among others on the use of CNC machines in a standard workshop are some of the challenges facing metalwork graduates for entrepreneurship development in colleges of education in Lagos and Ogun States, Nigeria.

Hypothesis Three

There is no significant difference between the mean scores of challenges facing the acquisition of metalwork technology skills by graduates and technologists for entrepreneurship development in colleges of education in Lagos and Ogun states, Nigeria

Table 6: summary of t-test analysis of significant difference in the mean responses of graduates and technologists on challenges facing the acquisition of metalwork skills for entrepreneurship development in colleges of education in Lagos and Ogun states, Nigeria

Variables	N	X	SD	d.f	t-cal	t-crit	Decision
Graduates	60	50.92	12.11	78	1.00	1.96	Required
Technologists	20	53.80	10.77				

The result of data presented in table 6 showed that the computed t-cal is 1.00 which indicated that t-cal is less than t-crit value of 1.96 at 0.05 level of significance and at 78 at degree of freedom, hence the null hypothesis is significant. The metalwork technology graduates and technologists have uniform opinion on the respondents to identify the challenges facing of the acquisition of metalwork skills by required for entrepreneurship development in colleges of education in Lagos and Ogun states, Nigeria.

Discussion of Findings

The findings in table 1 revealed that respondents agree with all the items as competencies required by metalwork graduates and technologists for entrepreneurship development in colleges of education in Lagos and Ogun States. This is in line the findings of Onoh and Moses (2015) managerial competencies are needed for effective management for an enterprise in order to enhance or achieve maximum output in an organization. Okoye (2014) noted that technical competency is the ability of the graduates to innovate or initiate new products or ideas, act positively and decisively with available facts to carry out specific tasks and functions to a standard.

The finding of the study also revealed that respondents agree with all the 15 items on practice skills as highly required by graduates and technologists for entrepreneurship development in colleges of education in Lagos and Ogun States. This finding is consistent with the report of Okwelle and Orlu (2020) that in reducing unemployment among metalwork students in colleges in education, there is need to impart good foundry pattern making skills as this will help them in establishing small scale business enterprise after graduation. Thus, if these practical skills are incorporated into the NCCE Curriculum, it will provide the graduates of metalwork with saleable skills necessary for gainful employment, self-production, self-sufficiency and self-reliance. This will to an extent address the observation of Yakubu (2014) who stated that one major challenge facing students of metal works trades upon graduation is the lack of competent knowledge and practical skills that will enhance self-reliance and for employment into the world of work. Therefore, for the students to be trained in metal works skills for self-reliance, self-sufficiency and for employment in the world of work, they require the relevant technical skills, scientific knowledge, in metalwork process among other. Furthermore, the result of null hypothesis showed that there is no significant difference between the mean responses of graduates and technologists on the competencies and skills of metalwork technology graduates for entrepreneurship development in colleges of education in Lagos and Ogun States, Nigerian. The implication of this study is that the status of the respondents has no statistically significant difference in their responses to the 15 items as the competencies and skills needed by graduates of colleges of education for entrepreneurship development in Lagos and Ogun States, Nigeria.

Conclusion

Based on the findings of the study, it was gathered that competencies and practical skills are required by metalwork technology graduates for entrepreneurship development in colleges of education Lagos and Ogun States, Nigeria is essential in contemporary society for self-production, self-sufficient, self-reliant and self-employment. These skills that are required to improve in production using various metalwork CNC machines, techniques and equipment. These are the identified skills that aid and simplified metalworking processes. The result of data from the study showed that the metalwork graduates and technologists shared the same opinion on the competencies and practical skills required in metalwork technology in the use of modern machines and equipment. This therefore called for improvement in the curriculum content of metalwork technology programme blended with entrepreneurship educations towards meeting the changes in contemporary metalwork industries.

RECOMMENDATIONS

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

1. The identified skills in CNC machines should be integrated into the curriculum content of metalwork technology programme by the curriculum developers.
2. Government and metalwork technology industries should collaborate and form strong partnership that will help colleges of education to expose their technologists and students to current trends in industry.
3. A blended entrepreneurship development training should be organised for lecturers that has passion

References

- Amacechi, O. J. & Thomas, C. G. (2022). Innovative Skills in Foundry Technology Required for Mechanical Engineering Graduates Entrepreneurship Development in Tertiary Institutions Amidst COVID-19 Pandemic in Rivers State. *Iconic Research and Engineering Journals*. 5 (9), 619-628
- Ajie, P.M, Osoh,M.N & Thomas, C.G. (2021).Up-Skilling Metalwork Technology in TVET Institutions in Rivers State for Relevance in the 21st Century Workplace. A Paper Presented at the 1st Annual National Conference held on 1st-4th November, 2021 at the School of Technical Education, Federal College of Education (Technical) Omoku, Rivers State, Nigeria.
- Aliyu, S.A. (1997). Entrepreneurship in Vocational and Technical Education. *Bichi Journal of Education*. 1 (1), 126-130.
- Aluwong, E.B. (2004). Metalwork Technology and Manpower Development. *Knowledge Review: A Multidisciplinary Journal of National Association for the Advancement of Knowledge (NAFAK)*. 9 (4). Pp. 93 – 97
- Akale, M.A. (2014). Educational Policies, Practice and Strategies for Achieving Reforms in Nigeria. Paper Presented at the Train the Trainer Workshop on Capacity Building for Lecturers in College of Education Organised by the Education Tax Fund (ETF) in Collaboration with the Nation Commission for Colleges of Education (NCCE), Federal College of Education, Katsina 20th to 24th September.
- Ede,O.E & Anyo, S.O.(2015). Competency Improvement Needs of Metalwork Teachers in the Use of Computer Numerically Controlled Machine Tools in the Technical Colleges in Oyo State, Nigeria. *Journal of Education Policy and Entrepreneurship Research (JEPER)*.2 (7), 19-27

Cranmer, J.K. (2014). Career centre, building the Western Australian workforce by increasing government of Western Australia, Department of Training and Workforce Development Ehimen, T.F & Ezeora, B.U.(2018). Metalwork Practice Skills Needed by Technical College Graduates for Sustainable Employment in Education in Edo & Enugu States of Nigeria. *International Journal of Education and Evaluation*. 4 (16), 62-69.

Ekong U. M. & Ekong C. U. (2016) Skills Acquisition and Unemployment Reduction in Nigeria: Case Study of National Directorate of Employment (NDE) in Akwa-Ibom State. *Int JEcon Management Sci* 5: 352. doi:10.4172/2162-6359.1000352.

Federal Republic of Nigeria (2013). National Policy on Education. Lagos: NERDC Press.

Medina, G.R.(2011). Medina Construction Students put Skills to Work on Bind House. From www.iiardpub.org on 15th May, 2023.

Onoh, B.E.C.E. & Moses, F. (2015). Entrepreneurial Skills Needs of Electrical and Electronics Technical College Graduates for Self-employment in Abu Odual Local Government Area Rivers State. *Journal of Science and Computer Education (JOSCED)*. 3 (3), 45-57.

Oluka, S.N & Okonkwo, S.C. (2021). Entrepreneurial Competency Needs of Self-Employed Electrical Technicians for Sustainable Economic Development in Enugu State. *International Journal of Innovative Social & Science Education Research*. 9 (4), 26-34.

Okwelle, P. C & Orlu, I. (2020). Foundry pattern making skills required by metal work technical college students in establishing small scale business in Rivers State. *Vocational & Technology Education Journal*, 2(1), 87 – 94

Okwelle, P.C., Idibia, C.N. & Ajie, P. M. (2022). Milling Machine Operational Skills Required by Metalwork Facilitators for Effective Production of Ready-to-Work Graduates in Tertiary Institutions in Rivers State, Nigeria. *Advanced Journal of Science, Technology and Engineering*. 2 (1), 93-101.

Okoye, K.R.E. & Okwelle, P.C. (2013). Technical and vocational education and training (TVET) in Nigeria and energy development, marketing and national transformation. *Journal of Education and Practice*, 4(14), 134- 138. Retrieved online from <http://www.iiste.org> on 11th June, 2018.

Oranu,R.N, Nwoke, G.I. & Ogwo, B.A (2002). *Fundamental of Metalwork Practice*. Nsukka: University of Nigeria Press Ltd.

Sowande, K.G.(2002). Technical Competency Improvement Needs of Metalwork Teachers.

Unpolished Ph.D Thesis Department of Vocational Teacher Education, University of Nigeria, Nsukka.

Udo, M.P.(2014) Acquisition of Office Technology and Management Skills for Self-reliance: A Step Towards Curbing Unemployment in Nigeria. *Asian Journal of management Sciences & Education*, Vol3 (4) 1-6

Yakubu, B. (2014). The need for competency in metal work technology in Nigerian technical colleges. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)* 5(8), 153-154. Retrieved from jeteraps.scholarlinkresearch.com, on 20th September 2018.

Wim, T.B. (2015). Can most technologist or technician be self- employed. Retrieved from <https://www.quora.com/can-most-technologists-or-technicians-be-self-employed> on 23/10/2017.