Journal of Centre for Technical Vocational Education, Training and Research (JOCETVETAR) Vol.3 No.2: December 2018

STRATEGIES FOR IMPROVING THE QUALITY OF SKILLS TRAINING IN FOUNDRY CRAFT STUDENTS OF TECHNICAL COLLEGES.

Oguejiofor, Victor Ikechukwu
Department of Mechanical Engineering, University of Nigeria, Nsukka.
E-mail: victor.oguejiofor@unn.edu.ng

Abstract

The study was a survey research design conducted to investigate the Strategies for improving the quality of skill training in foundry craft students of technical colleges in Enugu State. The population for the study was 25 people, made up of 21 students and 4 teachers of Government technical college Enugu. Two research questions and two null hypotheses tested at .05 significant levels guided the study. The data generated was analyzed using mean and standard deviation and t-test statistical tools were used to test the hypotheses. A 20 - items questionnaire was constructed and validated by three experts, one from the department of science and computer and two from the department technology and vocational education, Enugu State University of science and technology, Enugu and its reliability of 0.77 was used to generate data for 25 respondents made up of 21 students and 4 teachers of foundry craft. The reliability test was conducted at Government technical college Abakiliki. The findings of the study showed that students of foundry craft need current and relevant skills in foundry craft. The 20 items identified are needed for improving the quality of skill training in foundry craft students of technical college. The study concluded among other things that current and relevant skills required in the labour market are the right skills to be imparted on students of foundry craft for employability on graduation.

Key words: Strategies, skill training, foundry

Introduction

The world is fast changing and we are faced with many challenges. For our country to achieve high levels of economic growth and address our social challenges of poverty and unemployment, the government and technical education administrators must work very hard to invest in quality skill training in our technical colleges. They should make enough funding available for the training and re-training of personnel, provision of machinery and equipments that are needed in our technical college. A correct (right match) skilled population is a key to a country's sustainable development and stability. Quality skill training is the foundation for improving people's lives and sustainable national development.

Skill is the ability to perform activity expertly (Osinem & Nwoji, 2010). It is a well-established habits of doing things and it involves acquisition of performance capabilities through repetition of an operation. Skill is the demonstration of dexterity. It is the ability to carry out physical

or mental activity that adds to the overall performance of a specific job task. It is the quality that enables you to be successful in the workplace. Skills help to create productive and efficient workplace.

Skill training is what we do to improve productivity in the workplace and the competitiveness of our business. It is teaching or developing in oneself or others quality skills and knowledge that relate to specific useful competencies. It is training or improving one's capability, capacity, productivity and performance on the job. It forms the core and provides the backbone of content at technical colleges (Rene, 2018). Skill training is designed to provide students/employees with the targeted training they need to gain the knowledge and ability necessary to fulfill the specific requirements of their job positions. Skill training can be used to re-educate and retrain employees whenever new technology, processes or system debut (Berkely, 2018). Skills training are unique form of technical vocational education and training, combing on-the-job training and off the job learning which enables all walks of life to acquire the knowledge, skills and competencies required to carry out a specific occupation (ILO, 2017).It helps business to develop high-skilled employee. It increase productivity and lower the cost of recruitment. It covers up skill gap and creates efficient and smooth operation of work environment of a firm.

Strategy is a plan of actions designed to achieve a long term goal. It is a master plan or blue print for the achievement of a set goal. It is the human attempt to get to desirable ends with the available means (Kiechel, 2010). Strategy is a system of finding, formulating and developing a doctrine that will ensure long term success if followed faithfully (Rene, 2017).According to Freedman (2015) strategy is a high level plan to achieve goals under conditions of uncertainty. It involves setting goals; determine actions to achieve the goals, and mobilizing resources to execute the action.

Foundry is a factory that produces metal castings. It is a commercial establishment for producing cast metals by pouring molten metal into a mold and allowing it to solidify. Metals are cast into shapes by melting them into a liquid, pouring the metal into a mold and removing the mold material after the metal has solidified as it cools (Campbell, 2013). Foundry craft works involves many processes especially in the making of patterns, cores and moulds for producing intricate shapes (Jain, 2012).Foundry craft technology is the most efficient and effective means of producing parts of machines and other parts that are difficult to produce on the lathe machine with respect to grinding, milling and shaping (Clegg ,2014). Quality skills training in foundry craft can generate good number of jobs. Campbell (2013) stated that some developing nations including Nigeria have not developed appreciable skills in foundry. This is as a result of lack of quality skills training in foundry craft in our technical colleges. The transformation power of quality skills training can do wonders in providing the skills requires in the labour market.

(Kim, 2017)

The concern of this study is that there is a mismatch between the skills required in the labour market and skills acquired from technology and vocation institutions in Nigeria.

People graduate from technology and vocation institutions without employable skills. The problem of this study, therefore are what are the strategies for improving the quality skill training in foundry craft students of technical colleges in Enugu State.

The purpose of this study is to determine the strategies for improving the quality of skill training in foundry craft students of technical colleges in Enugu State. Specifically, the study seeks to:

1. determine the strategies for improving the quality of skill training among foundry craft

   students of technical colleges.

2. identify the challenges for improving the quality of skill training among foundry craft

   students of technical colleges.

Research Questions

The following research questions were posed to guide the study.

1. What are the strategies for improving the quality of skill training among foundry craft students of technical colleges in Enugu State?
2. What are the challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State?

Null Hypotheses

The following null hypotheses were tested at 0.05 level of significance.

1. There is no significant difference between the mean responses of students of technical college and their teachers on the strategies for improving the quality of skill training among foundry craft students of technical colleges.
2. A significant difference does not exist between the mean responses of students of technical college and their teachers on the challenges for improving the quality of skill training among foundry craft students of technical colleges.

Method

The design adopted in this study was survey. The area of the study was technical colleges in Enugu State of Nigeria. Enugu State is made up of 17 local government areas and 26 technical colleges (STVSMB, 2015).The population for the study was 25 people. The population comprised of four teachers and 21 students of foundry craft at Government Technical College, Enugu (the only technical college that offer foundry craft in Enugu State). The population for the study was manageable. There was no sampling. The instrument for data collection was a structured questionnaire developed by the researcher using a four point responses scale of strongly agree

(4), agree (3), disagree (2) and strongly disagree (1).The instrument was face validated by three experts one from the department of science and computer and two from the department technology and vocational education, Enugu State University of science and technology, Enugu. Their corrections and suggestions were used to produce the final instrument.

To determine the reliability of the instrument, it was trial tested using 10 student and 2 teachers at Government technical college Abakaliki in Ebony State. The data collected were analyzed using Cranach Alpha coefficient. The overall Cranach Alpha coefficient was 0.77 indicating high reliability of the instrument. The

instrument was administered by hand with the aid of a research assistant. The return rate was 96%.Out of the 25 copies of the questionnaire distributed; only 24 copies were returned. Mean and standard deviation was used to answer the research questions while t-test statistic was used to test the null hypotheses at .05 level of significance.

Result

Data in Table 1 showed that the respondents agreed that all the items indentified are the strategies for improving the quality of skill training among foundry craft students of technical colleges in Enugu State. The mean values were above the benchmark of 2.50 and the grand mean for the two groups of the respondents were also above 2.50.

Data for the study were presented and analyzed based on the research questions and hypotheses that guided the study. The details are contained in the tables 1-4.

Table 1: Mean and standard deviation of responses on the strategies for improving the quality of skill training among foundry craft students of technical colleges in Enugu State.

S/N	Item statement	Teachers		Students		Overall		Decision
		X1	SD1	X2	SD2	X3	SD3	
1	Analytical thinking	3.50	1.00	3.38	0.84	3.44	0.92	Agree
2	Critical thinking	3.50	0.57	3.60	0.49	3.55	0.53	Agree
3	Cooperation	3.50	0.57	3.38	0.76	3.44	0.67	Agree
4	Adaptability to technological changes	3.25	0.76	2.90	0.48	3,10	0.62	Agree
5	Ability to communicate effectively	3.50	0.57	2.80	0.49	3,15	0.53	Agree
6	Integrity	3.50	0.57	2.90	0.97	3,20	0.77	Agree
7	Collaboration with the industries (labour market)	3.50	0.57	2.90	0.97	3,20	0.77	Agree
8	Apt for innovation	3.25	0.50	3.20	0.75	3,22	0.63	Agree
9	Attention to details technically	3.50	0.57	3.70	0.75	3,60	0.66	Agree
10	Dependability	3.50	0.57	3.603	0.57	3,55	0.57	Agree
11	Ability to be focus	3.50	0.57	.14	0.83	3.32	0.70	Agree
12	Creativity	3.75	0.50	3.33	0.48	3.54	0.49	Agree
13	Persistence in learning	3.50	0.57	3.05	0.79	3.16	0.68	Agree
14	Humility in learning	3.50	0.57	3.05	0.79	3.16	0.68	Agree
15	Willing to learn	3.25	0.50	3.15	0.78	3.10	0.64	Agree
	Grand mean	**3.68**	**0.60**	**3.21**	**0.82**	**3.45**	**0.71**	**Agree**

Research question 1

What are the strategies for improving the quality of skill training among foundry craft students of technical colleges?

Hypotheses 1

There is no significant difference between the mean responses of students of technical college and their teachers on the strategies for improving the quality of skill training among foundry craft students of technical colleges.

that there is no significant difference in the mean ratings of students of technical colleges and their teachers on the strategies for improving the quality of skill training among foundry craft students of technical colleges in Enugu State

Table 2: t-test analysis of the mean responses of students of technical colleges and their teachers on the strategies for improving the quality of skill training among foundry craft students of technical colleges in Enugu State.

Respondents	N	X	SD	df	t-cal	t-crit	Decision
Teachers	4	3.68	0.60	23	1.40	±1.96	NS
Students	21	3.21	0.82				

Note: N = number of respondents, X = mean, SD = standard deviation and NS = not significant

Table 3: Mean and standard deviation of responses on the challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State

S/N	Item statement	Teachers		Students		Overall		Decision
		X_1	SD1	X2	SD1	X_3	SD3	
16	Lack of competent teachers	3.50	0.57	3.14	0.83		0.70	Agree
17	Lack of coordination & supervision	3.50	0.57	3.14	0.83	3.18	0.70	Agree
18	Lack of laboratory & workshop	3.50	0.57	3.00	0.84	3.23	0.79	Agree
19	Lack of indispensable tools	3.50	0.57	3.60	0.54	3.56	0.56	Agree
20	Lack of repair & maintenance of machines/equipment	3.75	0.50	3.33	0.48	3.54	0,49	Agree
21	Lack of school-industry linkage	3.50	0.57	3.05	0.79	3.16	0.68	Agree
22	Non availability & incorporating of indigenous curriculum into TVET curriculum	3.50	0.57	3.05	0.79	3.16	0.68	Agree
23	Lack of basic foundry instructional teaching facilities	3.75	0.50	3.10	0.77	3.42	0.64	Agree
24	Over dependence on government in funding technical schools	3.25	0.50	3.15	0.78	3.10	0.64	Agree
25	Lack of motivation to technical teachers	3.25	0.50	3.15	0.78	3.10	0.64	Agree
	Gran mean	**3.50**	**0.54**	**3.17**	**0.74**	**3.28**	**0.65**	**Agree**

The data presented in Table 2 indicated that at .05 level of significant, t-calculated of 1.40 is less than tcritical which is ±1.96.This implies

Research question 2

What are the challenges for improving the quality of skill training among foundry craft students of technical colleges?

Data in Table 3 showed that the respondents agreed that all the items indentified are the challenges for improving the quality of skill training among foundry craft students of technical colleges. The mean values were above the benchmark of 2.50 and the grand mean for the two groups of the respondents were also above 2.50.

Hypotheses 2

A significant difference does not exist between the mean responses of students of technical college and their teachers on the challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State.

Table 4: t-test analysis of the mean responses of students of technical colleges and their teachers on the challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State.

Respondents	N	X	SD	df	t-cal	t-crit	Decision
Teachers	4	3.51	0.56	23	0.99	±1.96	NS
Students	21	3.12	0.75				

Note: N = number of respondents, X = mean, SD = standard deviation and NS = not significant

The data presented in Table 4 indicated that at .05 level of significant, t-calculated of 0.99 is less than tcritical which is ±1.96. This implies that there is no significant difference in the mean ratings of students of technical colleges and their teachers on the challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State.

Discussion of Findings

Analysis of respondents to research questions one revealed that analytical thinking , critical thinking, cooperation, adaptability to technological changes, ability to communicate effectively, integrity, collaboration with the industries (labour market), apt for innovation, attention to details technically, dependability, ability to be focus, creativity, persistence in learning, humility in learning and willing to learn were the strategies for improving the quality of skill training among foundry craft students of technical colleges in Enugu State of Nigeria. This was observed from the overall mean (x) values which ranges between 3.10 and 3.60, indicating agreed because the mean values were above the bench mark

of 2.50. These findings were in line with the statement made by Jain (2012) that analytical and critical thinking are very important for improving the quality of skill training in Technical Colleges. Also Kim (2017) in support of students' retention and academic success stated that communication, cooperation and integrity help students to improve in their learning. Also the findings of the study were in line with Campbell (2013) who stated that developing nations can do well in foundry and related skills if their Technical Colleges can adapt to technological changes and collaboration with the industries.

The finding further revealed that lack of competent teachers, lack of coordination and supervision, lack of laboratory and workshop, lack of indispensable tools, lack of repair and maintenance of machines and equipment, lack of school-industry linkage, lack of basic foundry instructional teaching facilities, non availability and incorporating of indigenous curriculum into TVET curriculum and over dependence on government in funding technical schools were the current challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State of Nigeria. This was observed from the overall mean (x) values which ranges from 3.10 to 3.56,indicating agreed because the mean values were above the bench mark of 2.50.These findings were in line with Matthew (2016) who opined that the government should allocate more fund to technical education so that the necessary amenities like laboratories and workshops can be provided and equipped, competent teachers employed and training and re-training of technical teachers be possible for a better skill training in technical colleges in Enugu State. The grand mean (x) for the two groups of the respondents respectively in the two research questions were above 2.50.The closeness of the responses as shown by the entire standard deviation (SD) indicates homogeneity in their responses. Testing of the two hypotheses revealed that there is no significance difference on the mean responses of students of technical colleges and their teachers on the strategies and challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State.

Conclusion

The study set out to ascertain the strategies and challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State of Nigeria. In conclusion the teachers and students unanimously accepted that analytical thinking , critical thinking, cooperation, adaptability to technological changes , ability to communicate effectively, Integrity, collaboration with the industries (labour market), apt for innovation, attention to details technically, dependability, ability to be focus, creativity, persistence in learning, humility in learning and willing to learn were the strategies for improving the quality of skill training among foundry craft students of technical colleges.

They also accepted that lack of competent teachers, lack of coordination and supervision, lack of laboratory and workshop, lack of indispensable tools, lack of repair and maintenance of machines and equipment, lack of school-industry linkage, lack of basic foundry instructional teaching facilities, non availability and incorporating of indigenous curriculum into TVET curriculum and over dependence on

government in funding technical schools were the current challenges for improving the quality of skill training among foundry craft students of technical colleges in Enugu State of Nigeria.

Recommendations

Based on the findings of the study the following recommendations were made:

1. Only technically qualified teachers who have the required skills should teach foundry craft in our technical colleges.
2. Current and relevant skills required in the labour market should be the right skills to be imparted on students of foundry craft for employability on graduation
3. The government and technical education managers should adjust the curriculum to carry the current skills required in the labour market.

References

Beeley, P. (2011). *Foundry Technology*. Oxford, United Kingdom: Butterworth-Heinman Press.

Berkeiy, K. (2018). *Skill Development*. California, USA: University of California press.

Campbell, J. (2013). *Casting.* Oxford, United Kingdom: Butterworth-Heinman Press.

Chinda, J.N. (2000). *The Contemporary Technology Engineer and society*. Warri, Nigeria: Mindcon Press.

Clark, A.C. (2009). *Principle of Core blowing*. New York, USA: Macmillan Publishers.

Clegg, A. (2014). *Precision Casting Process*. Oxford, United Kingdom: Pergamon Press.

Freedman, L (2015). Strategy. Oxford, United Kingdom: Oxford University Press.

Hoyt, K.B. (2010). *What the future holds for vocational education*. Onitsha, Nigeria: Summer Educational publishing Nigeria ltd.

ILO (2017). *Quality Apprenticeship*. Geneva, USA: Skills &Employment Press.

Jain, P.L. (2012). *Principle of Foundry Technology*. New York, USA: Mc Graw–Hill Education.

Kiechel, W. (2010).*The Lords of Strategy*. Harvard, USA: Harvard business press.

Kim, F. (2017). *Students*, *retention and success*. New Delhi, India: Tata McGraw –Hill blishing Company ltd.

Loffler, L. (2010). *Foundry Process*. New York, USA: Melcher media and design.

Matthew, I. A. (2016). Financial allocation to education. Trends, issues and way forward in Nigeria .*Journal plus Education*, 15(1), 227 -242.

Muculloch, R.E. (2011). *Nature and Causes of Unemployment.* New York, USA: Harper and Row Publishers.

Onah, F.O. (2006). *Human resource management*. Nsukka Nigeria: Ephrate Press.

Osinem, E.C & Nwoji, U.C (2010).*Students Industrial Experience in Nigeria: Concept*, *Principle & Practice.* Enugu, Nigeria: Cheston Agency

Ltd.

Rac, P. N. (2011). *Manufacturing Technology in Foundry*. New Delhi, India: Tata McGrall – Hill Publishing Company ltd.

Rene, S (2018, June 16). Skill training Retrieved from *http//www.gvtec.comm*

Shavma, P.C. (2014). *Production Technology.* New Delhi, India: Chand and company ltd.

STVSMB (2015).*Science*, *Technical and Vocational State School Management Board*, Enugu State.

Walter, E. (2015). *Cambridge Dictionary*: Cambridge, United Kingdom: Cambridge University Press.