



Technical College Teachers' Competence in Workshop Organization and Management in Meeting Industry Demands for Sustainable Future in Delta State

Prof. Amasuomo Japa O. M.

Department of Vocational and Technology Education, Niger Delta University, Bayelsa State, Nigeria

japoamasuomo@gmail.com

080334105457

Asuai Patience

Department of Technical Education, Delta State University, Abraka Nigeria

asuaipatience1@gmail.com

07032032908; 08086424605

Abstract

The study investigated technical college teachers' competence in workshop organization and management in meeting industry demands for sustainable future in Delta State. The study adopted descriptive survey design. The population was 20 technical teachers randomly selected from four (4) out of nine (9) Public Technical Colleges in Delta State. Data was collected from respondents using structured questionnaire. The questionnaire was made up of three parts according to the research questions and 27 item statements with 7 items for research question One, 8 items for research question Two and 12 items for research question Three. The response options were strongly agree, agree, disagree and strongly disagree and rated 4, 3, 2 and 1 on a 4-point Likert Scale using a criterion score of 2.50 for decision making. The result of data analysis revealed that technical teachers lack competence in: keeping proper inventory tools, materials and equipment; the storage and control of tools and materials and observing safety rules in workshops in Technical Colleges in Delta State. It was recommended that Ministries of Technical Education should organize seminars and workshops to train technical teachers in workshop organization management and establish a uniform system of inventory control among others.

Keyword: Technical College; Teachers' Competence; Workshop Organization and Management; Industry Demand; Sustainable Future.



Introduction

Technical Education is defined as that aspect of education which leads to the acquisition of practical and applied skills as well as scientific knowledge (Federal Republic of Nigeria, FRN 2013). Technical Education is a comprehensive term referring to that process involving in addition to general education, the study of technology and related sciences and the acquisition of practical skills, aptitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. Amasuomo (2014) defined Technical Education as a post-secondary school education intended to produce a classification of workers referred to as Technicians. One of the aims of Technical Education is to give training and impart necessary skills leading to the production of craftsmen, technicians and other skilled personnel who will be enterprising and self-reliant.

Among the levels of technical institutions as listed in the National Policy on education is technical colleges which focuses on training of students who are competent in the trade crafts. Deebom and Obulor (2018) defined technical colleges as institutions where specific knowledge and practical skill required for specific trade, employment or professional craftsmen, and master craftsmen, or similar level in business and industry are imparted and taught. They are designed to prepare individuals to acquire practical skills, basic scientific knowledge and attitudes required as craftsmen and technicians at sub-professional level. Technical colleges in Nigeria are established to produce craftsmen at the craft level and master craftsmen at the advanced craft level, (FRN 2013).

Technical education curriculum, especially in technical colleges should contain tools and equipment whereby students should be trained to attain full mastery of their trade, that is, possessing adequate practical skills by undergoing on the job activities applicable to their trades within the school system.

According to Bello and Shaibu (2013), teaching is the interaction that exists between a teacher and a learner(s) in a classroom and workshop setting. Teachers through Technical Schools and Colleges provide skills for the development of a nation's workforce. Okorie (2001) defined a technical teacher as a person teaching general and specific technical theory in education. He is a master of his profession and responsible for the management of the classroom and the workshop. The major duty as a technical teacher is to make tools and equipment available for the students to use during training period. A technical teacher cannot impart practical knowledge effectively without a workshop. Workshop is a structure built for giving instructions and facilitating interaction between instructors and a number of people. They designed to protect properties, students, lecturers, instructors, workshop attendants, students and to take care of equipment, machines and other materials used for skill training. It is a place where students gain full knowledge of practical skills.

The purpose of a well organised and managed workshop is to give students the knowledge of practical skills needed in their various trades and occupation. Workshop management has to do with the process of bringing out the best from the workshop personnel so as to achieve the set goals and objectives of a practical lesson (Abdulkadir. M & Ma'aji (2014). The utilization and management of workshop is a key to overall successes of the programme in technical college. For this, the technical college, require a workshop where learners may construct, disassemble, repair, design, imagine and study. The effectiveness of teaching often depends on how well teachers can organise and manage facilities in the workshop. A good organisation of the workshop can arouse students interest and make teaching and learning effective. A well planned workshop should to minimize loss or damage from



vandals, theft and mishandling. Every workshop depends on procurement of equipment, machines, tools and training materials. Therefore, it is necessary to adequately manage and control equipment, tools and materials for effective skill training and practice.

Observations have shown that technical college graduates do not possess the necessary skills required for employment. This could be attributed to the quality of teacher, utilization of facilities and inappropriate training environment which is different from the industrial setting and lack of skill for self-employment. Consequently, if the facilities, tools and equipment are not well organised and managed, imparting practical skills to students may not be effective. In every school workshop, an inventory of all supplied items such as training materials, tools, equipment, chemicals, etc must be kept to ensure an uninterrupted flow of work. Without some means of finding out what material consumption and the anticipated work schedule, the technical teacher and students may find themselves in serious difficulty. Effective inventory control is aimed at ensuring that adequate but not excessive bank of materials are at hand at all times to meet operating management. A good technical teacher should be competent in the organization and management of workshop in terms of the manner supplied items are stored and the ease with which they are made available to students. Effective organization and planning and the ability to predict future inventory needs based on historical data technological changes and market conditions help to minimize overstock or understock situations. Instruction in the workshop become more effective when there is smooth flow of materials and tools from the store to the point of usage.

Safety of materials involves the proper stacking of supplies to prevent students' injury. Technical college teachers are expected to possess competency skill on adequate safety and risk management to keep facilities running safely and reliably. Being able to identify risks such as supply chain distribution or theft and finding ways to mitigate them in vital skill for managing inventory effectively. These competences help to manage stock level effectively, reduce cost and contribute to overall operational success.

Industries are concerned about recruiting the right type of personnel to carry out a variety of challenging and production job. The selection of the right person for the right job is key factor in the technological process of a country. Students desire to earn their livelihood after the successful completion of their education. Industries give access to employees to use their facilities and if they are not adequately trained on how to work in a safe and secure work environment, they will be no positive impact on productivity. From the foregoing, it has been observed that the above enumerated competences are workshop organization and management expected of Technical College teachers. This therefore, predispose a study on technical teacher's competence in workshop management in meeting industry demands for sustainable future in delta state.

The management of workshop and utilization of facilities is a key factor to overall successes of any programme in technical colleges. One of the aims of establishing Technical Colleges to produce technicians for industries through the acquisition of appropriate skills. This enables individuals to live well and contribute meaningfully to the development of the society. These skills can be acquired in an environment where adequate and functional tools and equipment are fully utilized. Observations have shown that technical college graduates do not possess the necessary skills required for employment. This could be attributed to the quality of teacher, utilization of facilities and inappropriate training environment which is different from the industrial setting and lack of skill for self-employment. Consequently, lack of skills has resulted to high rate of poverty and unemployment. The concern of this study, therefore is to



determine technical teachers' competence in workshop management in meeting industry demand for sustainable future in Delta State.

Research Questions

The following research questions were raised and answered.

1. What is the level of technical teachers' competence in workshop organization and management with regards to keeping proper inventory of tools, materials and equipment in meeting industry demands for sustainable future in Delta state.
2. What is the level of technical teachers' competence in workshop organization and management with regards to proper storage and control of materials in workshops to meet industry demands for sustainable future in Delta state.
3. What is the level of technical teachers' competence in workshop organization and management with regards to observing safety rules in workshops to meet industry demands for sustainable future in Delta state.

Methods

The study adopted the descriptive survey design. The population for the study comprised of 38 technical college teachers from nine (9) government Technical Colleges in Delta State. Random sampling technique was utilized in selecting four schools from nine technical colleges in Delta State. The total sample size for the study was 20 technical college teachers. Workshop organization Management Competence Questionnaire (WOMCQ) designed by the researcher was used to illicit the responses of the respondents on the three research questions. The response options were Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) and rated 4, 3, 2 and 1 respectively on 4-point Likert Scale format. The instrument for data collection was face validated by three experts, two in Measurement and Evaluation and one from Technology Education Department, Faculty of Education, Niger Delta University, Bayelsa State. The Cronbach Alpha Reliability Coefficient test was administered to respondents who were not part of the study. The results of the reliability test were 0.76 indicating that the instrument data collection was reliable. Data collected for the three research questions were analysed using Arithmetic mean. That is, on a 4-point Likert Scale with a criterion response score of 2.50; that means response scores equal to 2.50 and above indicated agree. Conversely, mean response scores below 2.50 indicated disagree.

Results

Research Question 1: What is the level of technical teachers' Competence in workshop organization and management with regards to keeping proper inventory of tools materials and equipment in meeting industry demands for sustainable future in Delta state

Table 1: Mean responses on the level of technical teachers' competence in workshop Organization and management with regards to keeping proper inventory of tools, materials and equipment

S/N	Items	X	S.D	Decision
1	Students are rotated through various workshop management roles	2.08	1.17	Disagree
2	Students always run short of any tool they need	2.26	1.01	Disagree
3	You always know what is available	2.08	1.17	Disagree
4	You know exactly the age and condition of tools and machines in the workshop	2.15	1.05	Disagree
5	Take stock of all tools, equipment and materials at the beginning of the section	1.44	1.77	Disagree
6	There is a standard system of inventory recording that you can conform to	1.93	1.56	Disagree
7	Condition of all tools are checked at least once a term	1.78	2.70	Disagree
Grand mean response score		1.96	1.49	Disagree

Table 1 indicates that students are not rotated through various workshop management (M=2.08), teachers always run short of tools they need (2.26), teachers do not have adequate inventory skills (2.08), there are no records showing age and conditions of tools (2.15), teachers do not take stock of all tool equipment and material at the beginning of the section (1.44), hence shortage cannot be ascertained. As a result, teachers can only manage to engage students in workshop management. There is no standard system of inventory control (1.93) condition of tools are not regularly checked (1.78). However, the grand mean score of 1.96 which is less than the criterion score of 2.50 implied that all the respondents agreed that teachers do not keep proper inventory of tools, materials and equipment in meeting industry demand for sustainable future in Delta state

Research Question 2: What is the level of technical teachers' Competence in workshop organization and management with regards to proper storage and control of material in meeting industry demands for sustainable future in Delta state?

Table 2: Mean responses on the level of technical teachers' competence in workshop organization and management with regards to proper storage and control of materials

S/N	Items	X	S.D	Decision
8	Materials can be easily removed from storage to the point of usage.	2.10	0.83	Disagree
9	Materials are stored when they will be ruined	1.95	0.93	Disagree
10	Materials are stored where account can be easily made	1.75	0.88	Disagree
11	Materials are secured from losses and pilferage	1.45	0.93	Disagree
12	Materials are stacked to prevent injury to students	1.20	0.44	Disagree
13	Materials are procured as at when needed	1.10	0.32	Disagree
14	Students are made to procure material as at when needed	2.70	0.55	Agree
15	There is adequate storage for tools equipment and materials.	1.70	0.83	Disagree
Grand Mean		1.74	0.71	Disagree

The results in Table 2 indicated that materials are not easily removed from storage to the point of usage (2.10), materials are stored when they will be ruined (1.95), materials are stored where account can be easily made (1.75) materials are not secured from losses and pilferage (1.45), materials are not stacked to prevent injury to students (1.20), materials are not

procured as at when needed (1.10), students are made to procure material as it when needed (2.70) and there is inadequate storage for tools, equipment and materials (1.70). This implied that material usage and management are not properly documented, therefore, losses to pilfering or shortage cannot be easily ascertained. From the foregoing, the grand mean score of 0.96 was less than the criterion score of 2.50 indicating that technical teachers do not carry out proper storage and control of material in workshops to meet industry demands for sustainable future in Delta state.

Research Question 3: What is the level of technical teachers' Competence in workshop organization and management. with regards to observing safety rules in meeting industry demands for sustainable future in Delta state?

Table 3: Mean responses. on the level of technical teachers' competence in workshop organization and management with regards to observing safety rules

S/N	Items	X	S.D	Decision
16	Lighting and ventilation is adequate and in poor condition	2.10	0.73	Disagree
17	Air in the shop is free from excessive dust, smoke e.t.c.	1.55	0.67	Disagree
18	Machine, benches and other equipment are well arranged so as to confirm to good safety practice	2.20	0.83	Disagree
19	Fire extinguishers are provided and everybody is thought how to use it	1.40	0.83	Disagree
20	Floor are free from oil, water and foreign materials	1.65	0.75	Disagree
21	Scraps are kept in scrap boxes properly	1.35	0.59	Disagree
22	Tools supply and material room is cleaned and kept orderly	1.55	0.67	Disagree
23	Benches and machines tables are always kept clean	1.95	0.75	Disagree
24	Guards are used as much as possible on equipment	1.20	0.44	Disagree
25	Machines cannot be used without authorization	2.75	0.55	Agree
26	Safety rules are posted particularly at each danger station	1.55	0.67	Disagree
Grand Mean		1.77	0.68	Disagree

Data presented in Table 3 showed that the mean responses of students in items 16-24 and 26 which ranged from 1.20 to 2.20 were below the criterion score of 2.50, except 25 with mean score of 2.75, which was above the criterion score of 2.50. This implied that the respondents disagreed that safety rules were observed and practised in the workshop. However, the grand mean score of 1.77 was also less than the criterion score of 2.50 indicating that technical college teachers do not properly observe and practised safety rules in the workshop to meet industry demands for sustainable future in Delta state.

Discussions

In the area of tool control and storage management, the findings from research questions I revealed that tool security from theft were grossly inadequate with a grand mean score of 1.96 which less than the criterion score 2.50. This result indicated that Teachers do not know the number of and quality of tools they have in their possession because of improper tool record keeping and the tool are not properly maintained to prolong their serviceable life. However, the tools are within easy reach when needed. The finding of this study finds support in the study of Osa-Edoh (2008) which give credence to the fact that the few equipment supplied to various educational institutions are not secured and maintained. They are often stolen and vandalized by students, staff and members of the public where such institutions are located.

The results from Research question 2 revealed that teachers lacked the general ability to take proper inventory of tools, materials and equipment in the workshop with a grand mean score of 0.96 because it was less than the criterion score of 2.50. This finding is in line with that of Uduak (2018), who reported that a properly equipped and maintained school workshop plays a vital role in the development of cognitive, psychomotor and affective domains of learning objectives

In addition, results from Question 3 revealed that the grand mean score of 1.77 was less than the criterion score of 2.50. this means that technical college teachers do not properly observe and practised safety rules in the workshop to meet industry demands for sustainable future in Delta state. That is, materials are not properly and safely stored and managed to prevent pilfering and vandalization. This finding is in line with that of Audu, Umar, and Idris (2020) who stated that college workshops in vocational and technical education facilities are currently in a very poor state and there are no planned methods for maintaining such facilities. In the same vein, it was observed that overall safety practice in these workshops leaves a big gap for improvement because of the importance of teaching students the safe use of tools and equipment.

Conclusion

The workshop is the environment where all activities leading to the development of manipulative skills and competency are taught and acquired. Since the acquisition of skills is one of the prime goals of technical colleges, the workshop environment should be properly managed. However, this study revealed the gross inadequacies in the utilization of the workshop in our technical colleges. Technical colleges simply lack the ability to control their inventories; tools maintenance and management is almost non-existent and controlled. The overall atmosphere in the workshop does not encourage the safe use of tools and equipment. There is urgent need to reverse this situation because the nations technological development depends largely on the level of skill acquisition of our craftsmen and technicians.

Recommendations

The following recommendation were made based on the conclusion drawn from the study.

1. Ministries of Technical Education should organize seminars and workshop to train technical teachers and students in workshop management.
2. Technical teacher training institutions should include workshop organizations and management in their circular
3. More research should be done to establish a uniform system of inventory control and materials control and storage. National board for technical education (NBTE) should act as regulatory body.
4. Ministries of education should create a department for safety inspectors to monitor and advise technical college staff in safety practice in their workshop.



References

- Abdulkadir, M., & Ma’aji, S. A. (2014). Assessment of workshop facilities, management practice in technical colleges of Niger state. *International Journal of Scientific and Research Publication*, 4(7), 1-6.
- Amasuomo, J. O. M., & Uzodinma, C. U. (2014). ‘An Overview of Development and Innovation in Technology and Vocational Education.’ In A. A. Adeyinka, E. E. Osuji, T. T. Asuka, A. A. Orubu, A. A. Agih, & C. N. Ozurumba (Eds), *Integrated Foundation of Education*.
- Audu, R., Umar, I. Y., & Iris, A. M. (2020). facilities provision and maintainance: Necessity for effective teaching and learning in Technical Vocational Education. *10SR Journal of Research and Method in Education* (10SR.JRME), 3(1)28-32. www.10srjournals.org.
- Ayeni, A. O. (2015). Worldwide comparison of technical and vocational education. Lesion for Nigeria technical and vocational education section. *Journal of Education and Practice*, 6(30), 103-110.
- Bello, H., & Shu’aibu, B. (2013). State of Facilities for Teaching Electrical Installation and Maintenance Work Trade in Technical Colleges in Bauchi State, *Nigeria International Journal of Vocational and Teacher Education*, 5(5), 82-91.
- Deeborn, M. T., & Obulor, O. L. (2018) Implementation of Safety Practices For Enhancing Quality in Instructional Delivery on Electrical/Electronics Workshops in Rivers State Technical Colleges. *International Journal of Latest Research in Humanities and Social Sciences*, 1(10), 26-33.
- Federal Republic of Nigeria (2013), *National Policy on Education*. 6th edition. Yaba, Lagos, Nigeria. Nigerian Educational Research and Development Council Publishers.
- Odu, O. K. (2010). *Reappraising the work skill requirement in building technology education in senior secondary schools for optimum performance in Nigeria*. Proceeding of the 1st international technology education and environment conference by African society for scientific research (ASSR) and human resources management Academic research society 473
- Obiya, K. K., & Ehimen, T. E. (2013). Trends in improving the Nigeria workforce through technical vocation education and training (TVET). *Journal of Technology and Vocational Education*, 9(1) 120-127.
- Okorie, J. U. (2001). *Vocational Industrial Education*. Bauchi: Leagueresearchers in Nigeria
- Osa-Edoh, G. I. (2008). The place of vocational and technical education in skills acquisition by secondary school student implication for counselling. *Journal of Technical and Vocational Education*, 1(2), 84-91.
- Uduak, I. E. (2018). School Plant Maintenance Culture and Utilization. *Handbook of Research on Educational Planning and Policy Analysis*, 138-155.