ASSESSMENT OF SAFETY MEASURES SKILLS AMONG METALWORK TECHNOLOGY STUDENTS IN OYO STATE COLLEGE OF EDUCATION, LANLATE

Engr. ADENIYI, Emmanuel Kehinde
emakenny76@gmail.com
Department of Technical Education
Oyo State College of Education, Lanlate, Oyo State

Abstract
Accidents are prevented by obeying safety rules differs from process to process. The paper assesses the safety measures skills among metalwork technology students for efficient operation of basic hand tools and machines in the workshop. The population of the study is 35. It comprises of thirteen (13) academic staff (teachers) and twenty-two (22) students offering metalwork courses in the Department of Technical Education of Oyo State College of Education, Lanlate. A self-designed instrument structured on 4-point Likert scale was used and was validated by exports in the metalwork technology unit. The instrument was pilot tested with seven academic staff of technical education and was subjected to Cronbach alpha coefficient which yielded 0.87. Mean and Standard Deviation was used to analysis the data. The study revealed that all the 10 safety measures skills of basic hand tools assessed by metalwork technology students are required for efficient operations in the workshop. Also, all the 10 safety measures skills of machine tools assessed by metal work technology students are needed for efficient operations of machine tools. The study, however, recommended that the curriculum should be made to emphasis the use of safety measure skills. Teachers, students and technical personnel should be made to attend workshops, seminars and conferences on the safety measure skills.

Keywords: Safety Measures, Skills, Students Operation.

Introduction

Vocational and technical skills are major skills expected of any students of Vocational and technical education to possess. In technical education, one of the key skills is safety measures skill. Observing the safety measure skill is paramount by all technical personnel in order for them to avoid accidents in the workshop. Technical education comprises of five major areas of specialization namely; Automobile Technology, Building Technology, Electrical and Electronics Technology, Metalwork Technology and Woodwork Technology (NPE, 2004). The focus of this paper is on the required safety measures skills by metalwork technology students for efficient operation of basic hand tools and machines in the workshop. The curriculum of metalwork technology in the colleges of education and technical colleges in Nigeria is designed to turn out competent teachers' of technology, technicians and craft men in many areas of metalwork trades. A competent metalwork certificate holder is expected to perform basic metalwork skills such as fabrication, machining, joining, casting, welding, metal forming, founding, pipe laying National Board for Technical Education (NBTE, 2001). The ISP board also stressed the need for such personnel to be able to operate machines for efficient production purposes in both industries and private practices.

The Federal Government of Nigeria in its National Policy on Education identified the main features of Technical education and Technical colleges' curricular activities as

being base on foundational and trade modules. The trade modules comprise of general education, theory and related courses as well as workshop practices (NPE, 2004). Workshop practices involve, observing safety, measuring, cutting, joining (welding, soldering, brazing, fastening), fabrication, and machine operation, finishing and cleaning (Akiibhadode, 2001). Adequate implementation of metalwork technology curriculum will enhance competent technicians and craft men for industrial and technological development in Nigeria. The safety measure skills received by these technicians and craft men will make them to be self-reliant and become employer of labour. However, as good and lucrative this metalwork trade is, the most alarming aspect of the trade is the increase in the rate of accident experience daily by technical personnel involve in carrying out various operation in the workshop, and this call for urgent attention and more advance instruction on accident prevention as this requires increasing emphasis on safety measures. Safety according to Alex (2014) means safeguarding against damage to personnel, machine tools and materials in the workplace. Prasha and Bansal (2008) defined safety as identifying, evaluation and controlling of work place hazards. It is reported by Diraso and Apagu (2007) that more emphasis should be placed on safety education because of highly complicated and digitalized machines and equipment which are now in circulation due to technological advancement in the world. They however, buttressed the need for industrial safety due to millions of industrial accidents occurring daily and yearly, and it results in injuries to personnel and in both temporary and permanent disability and even death of operators. The need to consider safety first for any metalwork operation cannot be over-emphasized. This statement is supported by Alex (2014) who formulated vocational education theory, which states that "effective skill acquisition in vocational education could only be secured when teacher successfully gained experience in the application of skills and knowledge of safety measures in the workshop operations".

Therefore, safety means method, technique or process adopted by technical personnel (students or workers) to reduce or prevent accident in the workplace. "Industrial safety relates to all measures taken to ensure the general well-being of worker, and prevent machine downtime and material wastage due to accidental damages, in order to raise the profitability of the enterprise. It is the most significant parameter for measuring the efficiency of operation of an organization.

Industrial safety is hinged on continually making improvements on industrial hygiene and prevention of accidents" (Akii Ibhadode, 2001). "An accident in the workplace is the occurrence of a disaster which may lead to injury to personnel, including fatality, damage to property, equipment and materials and loss of man-hours due to unsafe acts and unsafe condition" (AkiiIbhadode, 2001).

The author concluded that most accidents are preventable because they are caused by people through faulty behavior or the creation of hazardous situations. Accidents stem from lack of control over workers, equipment, materials and the environment. Therefore, this is a clarion call for all the technical personnel in the universities, polytechnics, colleges and other allied institutions most especially

metalwork technology of colleges of education who have been trained for industrial purposes and to teach metalwork trade in vocational institutions to possess required safety measures skills right from the training Institutions (Simi & Abubakar, 2018). The acquisition of required safety measures skills among metalwork technology students from school will equip the trainees adequately and helps to minimize persistent rate of accidents in metal workshop and fieldwork. However, skill acquisition is defined as the ability to receive training on a specific task or job and become expert in it (Isaac, 2011, Osinem & Nwoji, 2010).

Many basic hand tools, machines and materials in the metalwork workshop has been rendered un-used and ineffective because most students and technical personnel do not possess or stick to required safety measures rules and regulation in the workshop (Uwaifor, 2009). Also the curriculum of technical education of Nigeria Certificate in Education placed more emphasis on general workshop safety rules and regulation but little or no attempt is mentioned of the safety measures in metalwork technology. In addition, technical education teachers do not emphasized on the teaching of safety measures skills because of non-availability of instructional materials such as charts, safety materials, posters, and bulletin. Also, students, trainees and technical personnel and workshop structures and materials are prone to personal injuries and damage due to some operation performed in the workshop such as welding, cutting, turning, machining, drilling, boring. The focus of this paper is to assess safety measures skills among metalwork technology students for efficient operation in the metalwork workshop. To be specific, the paper aim to assess:

Safety measures required skills among metalwork technology students for operation of basic hand tools in metalwork workshop.

Safety measures required skills among metalwork technology students for efficient operation of machine tools in metalwork workshop.

Research Questions

This current investigation seeks to address the following research questions;

What are the safety measures required skills among metalwork technology students for operation of basic hand tools?

What are the safety measures required skills among metalwork technology students for efficient operation of machine tools?

Methodology

The study made use of descriptive survey research. The population of the study is 35. It comprises of thirteen (13) academic staff and twenty-two (22) students offering metalwork courses in Department of Technical Education, Oyo State College of Education, Lanlate. No sampling was used considering small size of the population. A self-designed instrument structured questionnaire rated on the 4-point likert scale ranges from Highly Required (HR)=4, Required (R)=3, Moderately Required (MR)=2 and Not Required (NR)=1 was used to collect the data. Experts in the technical education unit, metalwork unit, Oyo State College of Education, Lanlate, validated the instrument. The results of the pilot test were subjected to Cronbach-Alpha coefficient,

which yielded 0.87. A total of 35 copies of the instrument was administered and all the questionnaires that was personally collected by the researcher. Mean and Standard Deviation was used to analyze the research question. All items in the questionnaire that were required had a mean score of 2.5 and above while those items in the questionnaire with less than 2.5 were not required,

Results

Data collected were presented in tables and analyzed with mean score (x) and standard deviation (SD).

Table 1: Mean Responses and Standard Deviation of the Respondents on the Required Safety Measures Skills Required by Metal work Students for Operation of Basic Hand Tools

(N=35).

S/N	Items	X	SD	Decision
1	Always use the correct size, type and length of spanner for a Particular job.	3.91	0.83	Required
2	Ensure that the head of a hammer is firmly attached to the Handle before using it.	3.97	0.86	Required
3	Never use a file without a handle as the tang may pierce the palm of the hand.	3.94	0.85	Required
4	Never use a chisel with burred end as this may cause the Hammer to glance off and strike the hand.	3.89	0.80	Required
5	Hand tools should not be placed close to the edge of the bench.	3.90	0.82	Required
6	Metal part of the hand tools should be coated with oils and Stored in a safe place.	3.83	0.76	Required
7	Never use the shank of a chisel to drive in a nail into some objects.	3.86	0.78	Required
8	Ensure that the vise is properly fastened to the bench.	3.80	0.74	Required
9	Ensure that cutting tools are sharpen and clean before and After use respectively.	3.77	0.60	Required
10	Hand tools should not be left exposed to air to avoid rusting But should be stored after use.	3.74	0.63	Required

Table 1 above revealed that all the10 safety measures skills have their means core ranging from 3.74 to 3.97, indicating the minimum and maximum means core respectively. This means tha the mean score obtained for each of the item is above the decision mean score of 2.5 required for safety measures skills among metalwork technology students for operation of basic hand tools in metal workshop. Also, the standard deviation obtained ranging from 0.60 to 0.86, indicating that the mean scores of the respondents were very close to each other. Therefore, all the 10 safety measure skills assessed in this study are needed among students for efficient operation of basic hand tools in the workshop.

Table2: Mean Responses of the Respondents on the Safety Measures Skills Required by Metalwork Students for Operation of Machines
(N=35)

S/N	Items	X	SD	Decision
1	Before using any machine, ensure that you can control it.	3.70	0.64	Required
2	Do not remove guards, which are fitted around belt drives, Gear wheels, spindles and other rotating parts.	3.64	0.58	Required
3	When operating a machine, wear good fitting overalls With close fitting cuffs.	3.85	0.75	Required
4	Ensure that both the tool and work are securely clamped In machine tools.	3.60	0.56	Required
5	When using the grinding machine, wear goggles to protect Eyes from flying pieces of grits.	3.90	0.84	Required
6	Isolate machinery that is powered by electricity or Compressed air, when not in use.	3.82	0.70	Required
7	When operating a machine, immediately switch it off or stop It when distracted.	3.68	0.60	Required
8	Machine tools should not be repaired or adjusted while the Power is on	3.76	0.72	Required
9	Ensure that you know where all safety equipment is Positioned and kept.	3.94	0.72	Required
10	Never use your bare hands to remove metal chips and swarf, As they are very sharp and could easily pierce the hands.	3.89	0.82	Required

The results presented in Table 2 revealed that all the 10 safety measures skills have their means core ranging from 3.60 to 3.94, indicating the minimum and maximum mean score respectively. This means that the mean score obtained for each of the item is above the decision mean score of 2.5 for safety measures skills by metalwork technology students for efficient machine operation in metal workshop. The table also revealed that the standard deviations (SD) of the items are within the range 0.56 to 0.85, and this is an indication that the mean scores of the respondents were very close to each other. Therefore, all the 10 safety measure skills assessed in this study are needed among students for efficient operation of basic hand tools in the workshop.

Discussion

Findings from research question one revealed that the respondents agreed that all the 10 identified required safety measures skills among metalwork technology students for operation of basic hand tools in metal workshop are of critical important to smooth operation in workshop. These safety measure skills stated in the findings of the study agreed with the submission of Diraso & Apagu, (2007) that if basic hand tools are correctly handle in the workshop, accidents

and damage to materials and equipment will be greatly reduced. The author also stressed the need to ensure that metal parts of the hand tools should be coated with oils and stored in safe place. The findings from research question two revealed that the respondents agreed to all the 10 safety measures skills among metalwork technology students for efficient operation of machine in metal workshop. These safety measures skills as stated by the respondents in a more detailed form in the findings agreed with the opinions of Alex (2014) who defined safety as safe guarding against damage to personnel, machine tools and its operation as well as materials in the workshop He explained further that effective skill acquisition in vocational education could only be secure when teacher successfully gained experience in the application of skills and knowledge of safety measures in the workshop for efficient operation of machine.

Conclusion

The study established that accidents, waste and damage to material, personnel, equipment reduced greatly if the safety measures skills needed by metalwork technology for operation of basic hand tools such as file, chisel, hammer, saw, steel rule, scribers are strictly adhere to and fully taken into consideration in the workshop. Also, general safety rules and regulation, specific safety rules for work premises, bench work, operation of hand tools and machines, operation of power-operated tools and appliances, high-attitude work are all needed by teachers and students for successful operations and safety in the workshop.

Recommendations

The following recommendations were made based on the findings:

a) More emphasis should be placed on Technical education and metal work technology curriculum on general safety rules and specific safety measure skills.
b) Teachers, students and technical personnel should take into consideration safety measure skills for efficient operation of hand tools, machines and other allied equipment.
c) Teachers, students and technical personnel should be made to attend workshops, seminars and conferences on the safety measures skills for efficient operation of hand tools and machines.

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