

**ASSESSMENT OF SAFETY PRACTICE IN MOTOR VEHICLE MECHANICS
WORKSHOP IN TECHNICAL COLLEGE NIGER STATE.**

BY

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DECLARATION

I Mohammed, Abubakar Ibrahim, with the matriculation No: 2014/1/53197TI an undergraduate student of the department of Industrial and Technology Education, certify that the work embodied in this project is original and has not been submitted in part or full for any other diploma or degree of this or any other university.

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CERTIFICATION

This project has been read and approved as meeting the requirement for the award of B. Tech degree in Industrial and Technology Education, School of Science and Technology Education, Federal University of Technology, Minna.

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DEDICATION

This project is dedicated to almighty Allah who saw me through the course of this programme and to my parents Mr. and Mrs. Oladimeji, and also to my brothers and sisters for the love and support they have shown to me throughout the programme.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

The Motor Vehicle Mechanics workshop (MVMW) requires combination which poses the complexity of automobile working operations and consequently a challenge to technical college students and technicians towards troubleshooting, finding faults and diagnosing of automotive problems. This is as a result of industrial revolution in the automobile industry with sophistication in generally, there has been a growing awareness of the necessity to changes and improving the preparation of the students for productive functioning in the continually changing and highly demanding environment. This shift for a change has allowed for new insight on how students accumulate knowledge as they relied on the teacher as passive listener, while the teachers act as a director and a transmitter of knowledge.

The National Business and Technical Examinations Board (2007) stated that motor vehicle mechanic needed technical mechanical skills in maintaining, balancing and alignment of wheels and tyres in order to set up a befitting standard motor vehicle mechanic enterprise. These set of skills are required by Motor Vehicle Mechanic artisans for the maintenances and services of modern motor vehicles. However, the computer literacy knowledge requirement by the technical college students as a servicing strategy for Motor Vehicle Mechanics (MVM) is of great importance for the development of the (MVMW) and the nation.

The modern automated cars are highly computerized and require the knowledge of

Information and Communication Technology (ICT) to handle the highly sensitive computerized diagnosing devices/ equipment for troubleshooting, and analysis. H.Usoro (2016) define ICT as electronic technology for collecting, storing, processing, and communicating information. Therefore, ICT provides an atmosphere and unique environment in an electronic communication system through which a teacher and student can enlarge and share their cognitive set.

With the advent of ICT equipment, there has been a sudden increase in the advances of computer - related technologies in teaching and learning in the classroom and MVMW. The recent advances in communication technologies and their use in science and technology education provides an opportunity for educators to take a critical look at how these tools are being integrated into the classroom and MVMW. There is opent need to the demo training student's knowledge in MVM workshop of auto - mechanics students of technical colleges. Most graduates are not properly prepared for work, especially for the industries. It's however a concern among industrialists that products of technical institutions do not possess adequate work skills necessary for employment in industries. Nevertheless, it is expected that the knowledge acquired in schools, workshops, fieldtrips/Student Industrial Work Experience Scheme (SIWES) to the industries will prepare the students and equip them to aquire and retain a job after graduation.

Safety is the prime requisite in all the work places. Workplace safety affects everyone in school workshop environment, including staff, students, and visitors. A safe and healthy working atmosphere is a basic necessity and has to be ensured in the technical education

workshop without any failure. A simple mistake may lead to severe hazards (Onuaha 2001). Hazard is something with the potential to cause harm, this can include substances (both hazardous and dangerous), plant, work processes or other aspects of the work environment that is or could pose as a source of risk. Risk on the other hand, is the likelihood that a harmful consequence (death, injury or illness) might result when exposed to the hazard. Risk can be quantified as a function of the likelihood of occurrence of the potential harm arising from the hazard and the severity of consequences measured by the value of the damage the harm could cause to either human live, equipment or machineries. Strict adherence to safety rules, practices and precautions can facilitate and ensure a safe on site working environment. Therefore safety can be define as the mental awareness of an individual which serves as a guide for his conduct, behavior and overt actions to the end that he will be free from injury, accident or danger (Sara, 2004). Commitment from school leaders, consulting with staff and identifying, prioritizing and acting on key issues are the way to do to make real improvements in workplace safety in schools. Necessary charts, posters and pictures emphasizing the importance of safety, precautions to be taken, first aid methods echtera, should be displayed in the workshops in addition to necessary instructions and training programmes.

The major focus of a good Motor Vehicle Mechanic workshops in schools is the identification and appropriate use of available workshop tools and equipment to achieve the set objectives of helping the learners to learn and to encourage them more. In essence, MVM workshop 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 practical lesson. Effective MVMW in teaching – learning situation refers to the ability to maintain harmony and order in the workshop, this in consonance with Umar (2008) who stressed on measures for maintaining discipline in the industry outlined some methods which includes drawing a code of conduct, provision for better condition of service and more broad minded policy. Accidents are caused and all students are prone to accident (Alake, 1998). They can however be avoided with proper knowledge, skills and positive safety attitude on the part of individual in the workshop, Jain (2008) categorized causes of workshop accident as follow

- i. Environmental factors. Factors such as poor visibility, heat, noise dust and wet conditions are responsible for 4% of workplace accidents. The other 2% of accident are attributed to unavoidable natural events known as acts of god.
- ii. Human factors. The majority of workplace accidents are caused by human factors (88%) rather than machine faults, making safety consciousness, training and procedures the key element in promoting safety at work. These include ignorance, age, taking chance, forgetfulness, alcoholism fatigue, boredom, carelessness and personal instability.
- iii. Material factors. These include broken safety guards, equipment failure, and inadequate maintenance, poor distribution of safety signs, faulty machine design, leaking valves and of personal protective equipment.

Finally, Safety-related rules apply to employees involved in the operation and maintenance of the work environment, tools, materials and equipment. This includes

instructors, workshop technicians, machine operators, cleaners, and other operations personnel, as well as students. Achieving safety- related rule compliance requires more than monitoring for noncompliance and responding to it when it occurs. It requires preventive actions designed to encourage compliant behavior. This can only be achieved by identifying those safety skills desired of workshop technicians/assistants for effective management of school workshop environment and adherence to general safety rules and regulationsin (MVMW).

1.2 Statement of the Problem

Technical college MVMW are facing increasing expectations and pressures, many of which need to be addressed immediately. However, there are good reasons to treat workplace health and safety as a core issue in technical colleges. If it is an integral part of school planning, and addressed as part of other school processes, it contributes to the school's goal of providing effective educational and safe outcomes for students and staff.

One of the major problem facing MVM students in the workshop is that students do not adhere to the safety rules, regulations and guidelines. Sara (2004) stated that accident is an unexpected event that occurs resulting to interruption of the completion of activity. Provisions of protective safety equipment such as safety boots, over all, helmet, goggles, masks, and gloves in the (MVMW), and in addition, a busy working workshop environment where students are engaged with workshop activities are not organized, more also the students fail to comply to the safety measures which has been outlined to ensure the effectiveness of all workshop activities.

Safety in Technical colleges in Niger state workshops will be more complicated if the number of students are too many for the existing facilities and equipment in the workshop. Limited spaces as well as much number of students in the workshop will overcrowd the workshop and result to a boring workshop activities. Accident should therefore be avoided or reduced to a certain degree to ensure the effectiveness and efficiency of students engaging in work in the MVM workshop.

Due to the inappropriate knowledge of MVM safety practices gained by teachers and students in technical colleges, the input and output products of institution are being restricted in terms of its effectiveness, efficiency and productivity. However if the students should keep their knowledge of workshop safety up to date, there will be high prediction that technical students in MVM trade will be open and familiar with safety practices.

1.3 Purpose of the Study

The purpose of the study is to assess the safety practices of technical colleges in MVM workshop in technical colleges in Niger State. Specifically, the study sought to determine;

- i. Causes of occupational hazard and accident in MVMW in technical colleges in Niger State.
- ii. Level of compliance of safety rules and regulations in MVM workshop in technical colleges in Niger State.
- iii. Techniques to be adopted in order to improve on occupational safety practices in MVMW in technical colleges in Niger State.

1.4 Significance of the Study

The findings of this study would be of immense benefit to artisans, students, MVMW graduates, and technical teachers, National Board for Technical Education, Automobile Industries, Government and educational researchers. Artisans (road side mechanics) who are products of the informal automobile sector or apprenticeship programme will benefit from the findings of this study by becoming more enlightened on the automobile emerging technologies and strive towards updating their knowledge and skills in line with the identified technology skills. This will enable them to keep pace with technological improvements for performing optimally and remain relevant in the modern automobile industry. The automobile technology skills identified in this study when integrated into the curriculum could help the technical college students of MVMW to have the knowledge and skills of carrying operations in the automobile workshop safely. Students will also be exposed to new body of knowledge/content on modern cars so as to enhance their understanding of their working principles and how to handle complex fault in them. The findings will also enable MVMW graduates to acquire new competencies for servicing and repair of modern vehicles in order to remain relevant in the automobile industry.

MVMW teachers will benefit from the findings of this study by identifying areas of automobile technology where students are deficient and on which they may need to update their technical competence for the production of enterprising graduates who will be productive in paid or self-employment. Teachers through the findings of this study will also identify out-dated technologies in curriculum content that should be given less

emphasis while the emerging technologies will be given adequate recognition in the training of MVMW students. MVMW teachers will equally use the findings of the study to master these new technology skills as a means of enhancement towards productivity and adaptability. Hence, updating their skills will remain paramount with constant advancement in frequent changes in automobile technology. This will be attainable when technical teachers attend planned retraining and improvement programmes that takes practical and new skills in automobile technology into cognizance. The National Board for Technical Education which is solely responsible for planning and reviewing the technical college curriculum will through the findings of this study become aware of emerging technology skills required by MVMW student's maintenance of modern vehicles. National Board for Technical Education could use these identified skills to update the pedagogy and components of the curriculum for MVMW in technical colleges. This could make the curriculum more activity centered thereby stimulating the interest and motivation of students towards the automobile trade. Automobile servicing companies will equally find the result of this study very beneficial when incorporated into the curriculum content of MVMW in technical colleges as it will produce a pool of highly skilled automobile graduates (craftsmen), thereby enhancing the performance and productivity of the automobile industry towards the sustenance of Nigeria's economic and industrial growth, and also encourage the government to organize retraining programmes and skill improvement workshops for instructors of MVMW whose responsibility is to impart technical skills on students for gainful employment upon graduation.

1.5 Scope of the Study

The study is concerned with the assessment, safety practices of students in MVM workshop with respect to assessment of students' knowledge on servicing strategies, students safety, and level of compliance of safety practices with a view of investigating the causes of accidents in MVM workshop and also leading to ways of ensuring students compliance to safety practices in the workshop. It is however the view of the researcher that, since the operating environment, its set - up and circumstances of the technical colleges in the country are identical across the states, findings of this study can apply at this level throughout Nigeria.

1.6 Research Questions

- i. What are the causes of occupational hazard and accident in MVMW in technical colleges in Niger State?
- ii. What is the level of compliance of safety rules and regulations in MVMW in technical colleges in Niger State?
- iii. What are the techniques to be adopted in order to improve on occupational safety practices in MVMW in technical colleges in Niger State?

1.7 Research Hypotheses

The following null hypotheses (H_0) were formulated to guide the study and tested at 0.05 level of significance.

H_{01} : There is no significant difference between Mean responses of teachers and students on the causes of occupational hazard and accident in motor vehicles workshop in technical colleges in Niger state

H₀₂: There is no significant difference between Mean responses of teachers and students on the level of compliance of safety rules and regulations in technical collages in Niger state

H₀₃: There is no significant difference between Mean responses of teachers and students on the techniques to be adopted in order to improve on occupational safety practice in motor vehicle mechanics workshop in technical collages in Niger state.

CHAPTER TWO

2.0 REVIEW OF RELATED LITERATURE

In this chapter, works related to the study were arranged under the following sub - headings.

- ✓ Motor Vehicle Mechanic students in technical colleges in Niger state.
- ✓ Concept of safety in Motor Vehicle Mechanic Workshop.
- ✓ Causes of accident in Motor Vehicle Mechanic Workshop.
- ✓ Strategies for improving Safety in Motor Vehicle Mechanic Workshop.
- ✓ Summary of review of related literature.

2.1 Motor Vehicle Mechanic Students in Technical Colleges in Niger State

MVMW is an important environment to gain the effectiveness of learning Process. Students who enter into technical colleges in Niger state will learn basic things in theory and in practice before moving into higher institution where workshop safety courses are learned. Each workshop which is well and systematically equipped will help the effectiveness of learning MVM courses. This suits the learning process itself, whereby the work done and practice in the Workshop is a key component in the teaching and learning based on science and technical skills.

A workshop activity which involves all the workshop practices and training has an Effective result upon the technical college students in Niger state. MVM activities include mechanical, electrical, panel beating diagnosing, assembling, and wheel alignment and balancing, scanning, firefighting etc. This has given the technical college students of Niger state the anxiety and intrest to participate in the whole workshop

activities; it has also resulted to impartation of proper workshop safety and has promotes students learning skills and knowledge. If students eventually fail to have a good control in proper usage of workshop, workshop tools, and machines/equipment or to carry out a good job, then the problem of damaged tools, improper assessment and maintenance of tools and machines, wastage of material begin to sets in. In this regard, accidents set and it is liable to cause an ineffective learning. Therefore the responsibilities of the workshop attendants to make sure that students practice and apply safety precaution whenever they are in the workshop, in order to avoid untimely accidents and to ensure smooth and productive learning process. Nevertheless, students also play an important role in ensuring their workshop safety.

The workshop environment must be taken into consideration to build a more comfortable, safe and reliable environment for technical college students of Niger state. Sara (2004) stated that teachers also need to ensure adequate space for technical college students to work in accordance with the number of students there. Safety means a condition resulting from a change in human behavior or the physical environment to limit the likelihood of further hazards and reduce accidents. Hassan (1997), a large part of the safety compliance is the ability of all, acceptance of roles and awareness of the rules will be able to determine safe or otherwise such an activity in order to ensure effective safety at the workshop, teachers will need to identify to which extend the students practice safety rules and regulation.

2.2 Concept of safety in MVM workshop

Motor Vehicle Mechanic (MVM) work is one of the Technical Vocational Education

(TVE) programs which involves the acquisition of scientific knowledge in design, selection of materials, construction, operation and maintenance of motor vehicles. The program of MVM work in Nigeria technical colleges is designed to produce competent motor vehicle craftsmen for Nigeria technical and industrial development (Aruku, 2007). It also creat an avenue for technological advancement in Nigeria. To enhance these ego, zeal, potential and desire of these future professionals, highly skilled technical training must be attained. In other to train students to be highly skilled, the continuous use of the practical training workshop must be of good advantage, as this builds them up and promotes the knowledge they have acquired before they enter into the real world of the labour market. But the aspect of safety must be taken into full consideration in order to answer to the government for a productive skill and manpower achievement.

When carrying out workshop activities, the most important thing that should be considered is safety in the workshop. This must be the center of attraction for all Workshop attendants and practitioners. It should not just be a concern of safety during the practical work in the workshop, but it should entails safety at all time, most especially when the students come around the workshop for any other reasons other than their practical work.

Safety can be regarded as a habit or as a form of positive attitude. Safety cannot happen on its own just like that, it comes as a result of human action, it is human who chooses safety as a priority during the cause of work or attendance that put it into effect, but for those who sees it as just an inscribed word takes it for granted. Safety rules in theworkshop should be practiced from time to time. To avoid accidents in the workshop

or any other place, one has to be fully aware and careful. The teaching and learning of safety in the workshop should always be practiced to ensure that students do not take it for granted. Simpson (1998) said awareness of safety practices in the workshop should be emphasized to students: because one can never know when unfortunate incidents will occur. Thus, students should make every effort to avoid any accident in the workshop. According to Alake (1998), workshop safety are aspects that should be the main focus in doing practical work in the workshop, it should be concern equally not only when doing practical work but also at any time when students are in the workshop.

Safety is defined as a condition free from injury, fear, pain, shock, danger or loss which requires appropriate action by all the bodies involved during the contact. Majority of accidents occur as a result of man's carelessness, but a few number of accident occur as a result of other factors without the interference of man. It is understood that accidents occur mostly in the workshop when practical work is in progress. The occurrence of the workshop accidents leads to bums, cuts, deformities and loss of life. The occurrence of the workshop accident in the school workshop will tends to limit the main aim of the school settings, workshop practices and participation of the students. The school is known to be a place of gaining knowledge and not a Place of accidents either minor or major as a result of carelessness and inadequate safety To ensure that the school is still regarded as an institution where students go to gain knowledgeand skills, a study research must be conducted to know how well the student practice safety in the workshop. In addition, the school and the ministry of education must constantly carefully state the safety and its weakness in the implementation of existing safety

practices accidents which are caused by the use of hand tools and machines can easily be prevented if they are properly managed and maintained from time to time. Safety has been related to danger, a child is always warned to stay out of danger, protect him or her from colliding into people and also to avoid causing trouble that will endanger the society at large. All this is done as a means of kicking against danger thereby embracing safety. And this has left a good influence that will nurture the child to be safe at all times in his or her life encounter. Accidents can be reduced to minimum or avoided if the students are aware of safety measures and precautions to take in respect to safety. According to Jain (2008), safety in school workshop is very important, to avoid the process of teaching and learning being disrupted and reduced in terms of effectiveness. And this demands the cooperation of teachers and students. Usually the teacher has to provide the students with sufficient information, giving an explanation on what safety practices mean and the necessary steps that should be taken when the practical work commences.

It should be noted that safety is the priority of the teacher and it is also the responsibility of the teacher to deal with any sort of accident which occurs in the workshop under their supervision. Therefore workshop safety entails handling, maintenance and correct use of workshop tools has to be considered to avoid penalizing students in the later days or years. Safety also means the real situation in the protection of physical, social, financial, political, psychological, mood, work, education and other matters involving damages. When carrying activities in the workshop, safety aspects that needs to be monitored first is safety, machinery, equipment and other colleagues said Sara (2004). Safety

regulations and workplace safety laws shall according to Abdullahi (2002) own, studied and observed for safety is the responsibility of each student. To observe and on with the safety rules in the workshop, any risks which has to do with casualties, senses, damage to equipment and machines should be avoided Teachers should therefore lead, guide and move the students to build the desired attitude. While engaging in activities or work in a workshop, safety regulations and workplace safety laws should be known, studied and observed for safety is the responsibility of each Student. Safety awareness is not a priority to only students participating in workshop activities, but to other fellow students that are passive and to the students who are not present in the workshop, the instructor, the machines used and the environment. Safety awareness comes as a result of the desire to know and understand the use of workshop tools that are available. Tight corners and narrow spaces in the workshop when occupied by large number of students disrupt workshop activities and the workshop safety. Safety in the workshop is more complicated if there are too many number of students using the space and existing facilities or equipment at one time,

2.3 Causes of accidents in MVMW

Accidents have serious effect upon an individual worker, equipment and production output. It causes a significant loss of time to the establishment both man, working hours and time to attend to the victim. It causes loss of money to the injured person, especially if he becomes incapacitated. Jain (2008) pointed out that accident affect the family of the victim, causing an anxiety to members. It becomes worst if the accident is fatal thereby resulting to the death of the victim; his skills is lost forever, his family is

directly broken up, his place in the workshop may take some time to be filled by a substitute, thus increasing a burden on the establishment where he worked.

However, accident can be avoided by taking certain measures of safety precautions. This has been the major concern of this research work, assessing the degree to which safety practices are carefully carried out by technical college students of automobile technology in MVM workshop in technical colleges in Niger state, and the consequences of their actions in respect to safety practices in the workshop. Onuoha (2001), Sara (2004) and Jain (2008) recorded the measures of avoiding accident in the workshop under three categories. These are

- i. Proper safety instruction which can be done by use of special classroom session, safety booklets, posters, films, safety contacts by safety specialists.
- ii. Enforcement of safety rules and regulations, safe working conditions development, safety training of workshop instructors to enable them practice and impart safety education to the students, Provision of safety devices and creation of safety work habit on the personalized basis promotion of students participation in safety.

In the MVM workshops, there is a provision of workshop tools and equipment made available to students and staff in the technical colleges. An accident is usually an unplanned and unexpected event which results from a mistake somewhere, somehow and by somebody (Aniekwu, 2007). In 2015, more than 15,000 work-related injuries were reported by MVM alone. Add to this a possibly large number of unreported injuries, and the total figure could be more alarming. Unfortunately, some of these

work-related injuries are almost unavoidable, even when the best of precautions are taken by the MVM. Here is a look at some of the most common injuries and illnesses suffered by MVM.

2.3.1 Cuts and Burns

MVM often fall prey to accidents at the workshop due to equipment tip-over, falls, or collapse, and suffer sudden injuries, such as cuts and burns. In fact, contact with objects and equipment, such as automobile parts or tools accounted for around 44.5 percent of all injuries suffered by the MVM in 2005, according to The Bureau of Labor Statistics.

Also, cuts were the most common MVM injury reported in 2011, according to a study published in the journal *Industrial Health*. Some other common injuries include burns and fractures. While some of the accidents can be avoided by using safety equipment, not all of them are avoidable.

2.3.2 Cumulative Trauma Disorders

These are injuries caused by overexertion, strains, and sprains. Mechanics often need to lift heavy objects, strain their muscles, bend over and work for hours at a poor posture. As a result, they often suffer repetitive stress injuries or cumulative trauma disorders, such as muscle pulls, spinal injuries, wrist injuries, back sprains, elbow injuries, ulnar nerve entrapment, and carpal tunnel syndrome. In fact, one of out of every five injuries reported by the MVM in 2005 was some form of repetitive trauma injuries, according to The Bureau of Labor Statistics.

The BSL data also revealed that heavy lifting accounted for more than 50 percent of all overexertion injuries in 2005. Most of these injuries can be avoided by using advanced

tools for lifting heavier objects and by utilizing proper lifting techniques. Unfortunately, however, some musculoskeletal injuries are more severe than the others and may not always be avoided.

2.3.3 Toxic Injuries

Auto mechanics are also susceptible to long-term illnesses caused by exposure to industrial chemicals and gasoline additives. For instance, some auto parts, such as, clutches and brakes may contain a harmful compound called asbestos, which triggers the risk of respiratory diseases and even cancer among the mechanics, says The Environmental Protection Agency. Some other products used in a garage may contain lead. According to the Occupational Safety and Health Administration (OSHA), contact with products containing lead may cause kidney diseases, anemia, neurological disorders, and even death.

2.4 Types of accidents common to MVM workshop in technical colleges

The probable occurrence of a work - related accident in industrial settings is a possible Certainty. Simpson (1998) stated that the physical nature of the work combined with dangers with heavy machinery, movable objects, and harmful chemicals make the workshop environment one of the most dangerous for Students. Occurrence of accident in the workshop can be limited by the introduction of policies and procedures to reduce the risk of accidents and also to protect the students. Further descriptions on the types of accidents common to MVM workshop include:

Electrical hazards: Electricity is one of the major causes of injuries, fatal accidents and fire Accidents can happen when people touch part of a unit carrying live current. If the

insulation becomes faulty, even contact with part of a unit, which does not normally carry live current can lead to serious accident, electric current can also cause burns. Again, if the installation is faulty there is a short circuit, intense heat can develop leading to the possibility of a serious fire. The main electrical hazards are contact with live parts causing electric shock and burnt, fault which could cause fire, and fire or explosion where electricity could be the source of ignition in a potentially flammable or explosive atmosphere.

Mechanical hazards: Mechanical hazards are related to the machinery being used in the workshop. In any case the machinery or equipment being purchased must meet safety requirements, and preferably marked. All protection and guards, assessment and safety instruction must be included, and no extra protection should be needed for the operator. During the installation of a machine, care must be taken ensuring that all guards are properly fixed and used. It is important the safety device not to constitute an obstacle to work, and not to hamper the maintenance services of the machine. Often, accidents happen when machines are accidentally started during assessment and repair work. Therefore, careful servicing of machines is most important when it comes to work safety.

Chemical hazards: Chemical hazards include compounds or mixture of them that can produce adverse health effects under some conditions of exposure. The effects may be an acute toxic, which develops soon after exposure, rapidly reach a climax and usually recover quickly when exposures cease. These effects include eye, nose and throat irritation, skin injuries and certain lung injuries, sub - acute or short - term develops

more gradually, usually on prolonged exposure, and tend to recover when exposure ceases, and chronic or long - term, which develop gradually over a prolonged period of exposure, and tend to recover extremely slowly. These effects include kidney damage, fetal damage, and chemically induced cancers. Inhalation is the most common route of entry of aerial: gas, dust, vapour chemical into the body in a workplace, followed by absorption through the skin usually in case of liquids and by ingestion, The later route is the least important, provided that the rules of personal hygiene, such as eating at workplace washing hands before eating, etc are followed. In addition to their toxicity and health effects, several chemical hazards present in a MVM workshop are flammable, e.g petrol, engine oils, paints. Vents, etc. and accumulation of gases, vapours and dusts result in an explosive atmosphere. The accumulated substances mixed with air have the possibility to catch fire or explode.

Noise and vibration Students are exposed to excessive noise during different operations in MVM workshop. Such as noise levels from panel beating and other mechanic operations using hand tools are variable but generally high, noise during paint spraying, noise from work with sheet metal, noise from body repair work, noise from air grinders and Hand transmitted vibration and vibration transmitted through the seat or feet.

Explosion and Fire Fighting: A variety of explosive materials exist in a MVM workshop. These can be waste engine oil that is stored in drums or tanks, other flammable liquids storage or use of paints, solvents, cleaning materials. Gases in cylinder, explosive dusts sanding organic fillers, other explosive materials air bags, seat belt parts, fine flammable dusts, which if ignited, can cause violent explosion and

damage.

Electronic Radiation: Welding operations are associated with the intense light that can cause serious and often permanent eye damage if students do not wear proper eye protection. The intensity of light or radiant energy produced by welding, cutting or brazing operations varies according to a number of factors including the task producing the light, the electrode size and the current. Slips and falls are the most common types of accidents found in the workshop which could result to bruises, cuts, strains and sprains poorly positioned tools and tools that fall while they are being carried, Industrial equipment can cause workshop accidents resulting to injuries or even death. These injuries affects mostly the head and neck, therefore preventive measures requires use of safety headgear, proper restrained of carried or manipulated objects, proper training on equipment use and the display of warning signs.

2.5 Strategies for improving safety rules and regulations in MVM workshop

Strategies for improving safety rules and regulations in MVM workshop requires the use of safety wears like hand gloves, safety boots, helmets and goggles which are mandatory for workshop activities. Refusal to make use of goggles when welding affects the eyes and can result to temporal or permanent blindness because of the sparks that can destroy the tissues of the human eye. It has been said by Simpson (1998) that many students who work in the workshop end up losing parts of their bodies like fingers and toes which occur as a result of improper dressing in the workshop. Wearing of overalls is one of the strategies adopted to correct the occurrence of accident in the MVM workshop any sensible student does not joke with weaning of overalls when

working in the workshop Attah 1997). Examples of safety wears include workshop coats, safety boots, hand gloves, goggles, masks helmets etc. Without the workshop safety wears, students should not be allowed into the workshop for any sort of activities.

Students are therefore advised to carry out some common safety guidelines like pulling of hand brake, choking of gear wheels, jacking of the vehicle on a hard surface using spreading blocks for load spreading. Falls are the most common types of workshop resulting to bruises, cuts, strains, and sprains which are among common injuries that can result from falls. The use of non - slip mats should be used in front of machines where necessary and the machine should be sensibly placed to avoid overcrowding and suitably anchored to vibration. All the service records of the machines and equipment should be maintained as this will not only save time but also help to take care of repetitive break downs, keeping of tools and accessories should be done properly and accordingly as placing them anywhere will lead to chaos and inefficient working. Smoking and drinking should be prohibited in the workshop, the pathway in the workshop must be kept clean and clear, any grease or oil spillage on the pathway must be cleaned and cleared on a regular basis. In terms of safety and fire precaution, mock security drills are conducted Workshops are enclosed structures at the time of emergency students participate in mock security whenever they are conducted because that is the best way to prepare students for emergencies. Students should ensure that an appropriate fire extinguisher is readily accessible when welding. A clear distinction should be made known to students between the water extinguisher and carbon dioxide extinguisher.

Proper training is advised so that no confusion arises at the time of emergency. Most importantly, every student in the MVM workshop must know the contact number of ambulance and fire service. Above all, safety is the primary concern.

Secondly, improving work efficiency with minimum trouble is what workshop managers would like to achieve. Mohammed, 2008 and safety in the workshop will be more complicated if the number of students are too many for the available space, facilities or existing equipment a time. Confined spaces as well as many students would exacerbate the workshop activities. If all the strategies for safety rules and regulations are observed and followed carefully, then one can achieve both the targets. It is always important to stay prepared for accidental emergency because trouble never comes announced and that's what MVM workshop safety does.

2.6 Summary of Review of Related Literature

The concept of safety in MVMW is to prepare students to be skilled, and productive Member workforce to his immediate environment and to the society at large. By improvising students with a safe working environment to facilitate teaching and learning, we promote student creativity, respect for all and good working principles. An increase in industrialization has brought about a high number of industrial related accidents.

The concept of workshop safety should have come before hand to safe guard and protect industrial worker from hazardous work environment which is occurring in MVMW and industries, resulting to a frequent number of accidents. The causes of accidents comes as a result of environmental factors, human factors and material or

equipment factors, which cause biological disabilities to the victims, their families and economic meltdown of the society at large.

Therefore, the occurrence of accident in the MVMW can be avoided if the proper measures of safety precaution are practiced and applied, instruction on safety practices should be given to new students or staff in the form of orientation even before they start using or working in the workshop. Students should practice safety rules and regulation as a collective action to create and maintain safe working environment.

Accident in MVMW includes slip due to oil spillage on the floor which could cause fire outbreak or explosion where electricity could be the source of ignition in a potentially explosive atmosphere, contact with live parts causing electric shock and burns, vehicle inspection pits, rolling roads and brake testing equipment, wheel alignment and balancing, vehicle testing, compressed air equipment, lifting equipment, cutting and welding processes, grinding machines and grinding wheels, painting, exhaust fumes from a running engine, used engine oils, hydrogen emitted from batteries, petrol, body fillers, asbestos. Brake and clutch linings, welding and cutting fumes, noise level from panel beating and other repair operations using hand tools are variable but generally high. Safety education and the development of workshop safety, safety awareness is regarded as the steps in practicing. Applying, maintaining and assessing a healthy working environment. Students should be acknowledged for their safety education by praising, commenting and making correction where applicable.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the method adopted by the researcher in carrying out the study. The chapter is subdivided into the following subheads: Research design, Area of the study, Population of the study, Instrument for data collection, Validation of the instrument, Administration of the instrument, Method of data analysis and Decision rule.

3.2 Research Design

The research design that will be used in carrying out this study is a descriptive survey research, design where questionnaire will be used to collect data from the respondents for the purpose of the study. A descriptive research design in the view of Nworgu (2006) is the study which aims at collecting data on, and describing in a systematic manner the characteristics, features or facts about a given population. Therefore, the survey design will be considered suitable in focusing on the assessment of safety practices in Motor Vehicle Mechanic Workshop in Technical Colleges Niger state, since the study will check for information from a sample that will be drawn from a population using questionnaire.

3.3 Area of the Study

This study will be carried out in Niger State, a state in Central Nigeria and the largest state in the country which as the total area of 76,363 km² which shares boundary's with Kaduna State (North-East), Federal Capital Territory (FCT) (South-East), Zamfara State (North), Kebbi State (West), Kogi State? (South), Kwara State (South-West), while the

republic of Benin along Agwara Local Government Area (North West). All Technical Colleges in Niger State are, Government Technical College Bida, Government Technical College Kontogora and Government Technical College Minna, Government Technical College New Bussa, Mamman Kontogora Technical College Pandogari, Federal Science Technical College Shiroro, Suleiman Barau Technical College Suleja.

3.4 Population of the Study

The population for the study is 720, consisted of 700 students and 20 teachers from seven technical college in Niger State. Data obtained from Niger state science and technical education board, Minna in (2019) has shown that there are seven technical colleges in Niger state. The study ought to select four from the seven Technical college in Niger State as shown in Table 3.1.

Table 3.1: Population of the Study

S/N	Names of Colleges	No of Students	No of Teachers
1.	Government Technical College Bida	190	6
2.	Government Technical College kotongora	165	4
3.	Government Technical College Minna	200	9
4.	Government Technical College New bussa	160	4
5.	Mamman Kantogora Technical College Pandogari	140	3
6.	Federal Scince Technical College Shiroro	145	4
7.	Suleiman Barau Technical College Suleja	160	4
	Total	1160	34

3.5 Sample and Sampling Techniques

A sample of 108 student and 23 teachers' respondents is selected from four colleges, where 15 percent of students are used from each college and a random sample of teachers. The respondent is selected without any form of bias to regard tribe, culture, religion, and gender.

S/N	Names of Colleges	No of Students	Numbers of Teachers
1.	Government Technical College Bida	29	6
2.	Government Technical College kotongora	25	4
3.	Government Technical College Minna	30	9
4.	Government Technical College new bussa	24	4
Total		108	23

3.6 Instrument for Data Collection

The instrument that will be used for collection of data is a structured questionnaire developed by the researcher for this study. It consists of Parts 1 and 2; Part 1 contains personal data of the respondents. Part 2 consists of (33) items divided into three Sections of A, B, C. Section A contains 11 items which deals with the level of Compliance of safety rules and regulations in MVM workshop in technical colleges in Niger. Section B contains 10 items which deals with the causes of occupational hazard and accident in MVM workshop in technical colleges in Niger state. Section C contains 12 items which deals with the techniques to be adopted in order to improve on occupational safety practices in technical colleges in Niger state.

3.7 Validation of Instrument

The instrument for data collection is designed by the researcher and will be validated by three lecturers from the department of Industrial and Technology Education, Federal University of Technology Minna, Niger State. All suggestion and corrections will be before administering the instrument to the respondent by the researcher and one researcher assistant from each technical college.

3.8 Administration of the Instrument

The researcher will administer the questionnaire personally and with the help of a researcher assistant in each of the technical colleges. The questionnaire will also be collected by the researcher.

3.9 Method of data Analysis

Data collection will be analyze using frequency counts, mean, standard deviation and t-test, mean was used to answer the research questions, while analysis of variance (ANOVA) will be used to determine whether difference exist between opinions of the teachers and students on the assessment of safety practices in MVMW in technical colleges in Niger state.

A four (4) point rating scale will be used with the following response options.

Strongly Agree	SA – 4 points	Agree	A – 3 points
Disagree	D – 2 points	Strongly Disagree	SD – 1 point

3.10 Decision Rule

To determine acceptance level, mean score of 2.50 (average of 2 and 3) will be used as deciding point between agreed and disagreed, relative to four point's rating scales

adopted for the study. Therefore, responses with a mean of 2.50 and above will be considered agreed while responses below will be considered disagreed. For hypotheses testing, 1.96 will be determined as t-critical based on the 129 degree of freedom. Therefore, any item that has its calculated “t” less than t-critical will be regarded as accepted and not significant, while any item that has its calculated “t” equal or greater than t-critical was regarded as rejected or significant.

CHAPTER FOUR

4.0 RESULT AND DISCUSSION OF DATA ANALYSIS.

This chapter consists of summary of analysis and interpretation of result for the data collected through the responses of Assessment of Safety practice in Motor Vehicle Mechanic Workshop in Technical Colleges Niger State.

4.1 Research question one

What is the level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State?

Table 4.1: the mean response of teacher and student on the level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State.

S/N	ITEM	X ₁	X ₂	X _t	REMARK
1	The tools are always return to their rack after use	2.86	2.83	3.84	Agreed
2	Students always wear proper dress in the workshop	2.63	2.56	3.59	Agreed
3	Students carry sharp tools like chisel, scriber, screw driver in their pockets	3.36	3.21	3.28	Agreed
4	Students rest on workshop machines	2.00	2.40	2.20	Disagreed
5	Hand files use by students are without handles	2.26	2.35	2.30	Disagreed
6	Approved protective wears are worn by technicians	3.66	3.61	3.63	Agreed
7	Waste materials are properly disposed	3.56	3.35	3.45	Agreed

8	Dangerous chemicals are kept safe	2.56	2.49	2.50	Agreed
9	adequate ventilation	3.66	3.66	3.66	Agreed
10	The work environment is free from hazards	3.16	3.11	3.13	Agreed
11	Lightning are provided where necessary	3.35	3.20	2.25	Agreed

Key $N_1 = 23$, $N_2 = 108$

Key: N_1 = total number of teachers, N_2 = total number student X_1 = the mean response of teachers for the study, X_2 = the mean response of student for the study. X_t = the average mean of teacher and student on particular item.

From table 4.1, the result from the response of the respondent revealed that all the item which deal with the level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State. From the table it shows that item 1,2,3,6 to 11 were agreed with which implies that their mean was above the decision rule of 2.50 and above. While item 4 and 5 was disagreed with in the sense that their mean response was below the decision rule of 2.50 which implies that student do not rest on machine and the file they use are with handle.

4.2 Research question two

What are the causes of occupational hazard and accident in Technical College Niger State?

Table 4.2 the mean response of teacher and student on the causes of occupational hazard and accident in Technical College Niger State.

S/N	ITEMS	X ₁	X ₂	X _t	REMARK
12	Shock from electrical components	2.50	2.60	2.55	Agreed
13	Not adhering to safety rules and regulation	2.83	3.11	2.97	Agreed
14	Using wrong tools for a particular work	2.33	2.80	2.56	Agreed
15	Foot injury as a result of stepping on sharp object	2.90	2.91	2.90	Agreed
16	slippery floor	3.20	3.18	3.19	Agreed
17	Inadequate knowledge of safety rules	3.33	3.05	3.19	Agreed
18	Careless attitude of the technicians	2.91	2.61	2.76	Agreed
19	Lack of the knowledge of the work being carried out	2.66	2.55	2.60	Agreed
20	Injury from the use of hammer when panel beating	2.58	2.55	2.56	Agreed
21	power supply failure	2.12	2.00	2.06	Disagreed

Key N₁ = 23, N₂ = 108

Key: N₁= total number of teachers, N₂= total number student X₁= the mean response of teachers for the study, X₂= the mean response of student for the study. X_t = the average mean of teacher and student on particular item.

From table 4.1, the result from the response of the respondent revealed that all the item which deal with the causes of occupational hazard and accident in Technical College Niger State. From the table it shows that item 12 to 20 were agreed with which implies that their mean was above the decision rule of 2.50 and above it implies that these are

basic causes of occupational hazard and accident in Technical College Niger State. While item 21 was disagreed with in the sense that their mean response was below the decision rule of 2.50 which implies that power supply failure cannot cause hazard and accident in technical colleges when all things are in place.

4.3 Research question three

What are the techniques of improving the occupational safety practices in Technical Colleges in Niger State?

Table 4.3 the mean response of teacher and student on the techniques of improving the occupational safety practices in Technical Colleges in Niger State.

S/N	ITEMS	X1	X2	Xt	REMARK
22	Experience workers should be in charge of the new ones	3.40	3.21	3.30	Agreed
23	Loose clothing should be avoided when operating machines	3.30	3.06	3.18	Agreed
24	Encouraging protective maintenance rather than the corrective maintenance in the MVM workshop	2.96	2.75	2.85	Agreed
25	Having proper orientation before the use of the machines	3.90	3.51	3.70	Agreed
26	The work place should be kept tidy	3.50	3.15	3.32	Agreed
27	Use of English language on safety signs and symbols	2.96	3.00	2.98	Agreed
28	There should be a provision for safe means of disposing waste materials	3.40	3.35	3.37	Agreed

29	Manufacturer's guide should be adhered to while operating machines	2.93	3.03	2.98	Agreed
30	Training and retraining of the supervisors	3.00	3.03	3.01	Agreed
31	Creation of safety club in schools	2.58	2.88	2.73	Agreed
32	Protective guard should be fixed in all exposed machine parts	2.55	2.54	2.54	Agreed
33	Use safety goggle for welding	2.75	2.88	2.81	Agreed

Key $N_1 = 23$, $N_2 = 108$

Key: N_1 = total number of teachers, N_2 = total number student X_1 = the mean response of teachers for the study, X_2 = the mean response of student for the study. X_t = the average mean of teacher and student on particular item.

From table 4.1, the result from the response of the respondent revealed that all the item which deal with the techniques of improving the occupational safety practices in Technical Colleges in Niger State. From the table it shows that all the item was agreed with which implies that their mean was above the decision rule of 2.50 and above it implies that these are basic causes of occupational hazard and accident in Technical College Niger State. These implies or show that the above techniques were practice to improve occupational safety among student in technical colleges.

4.4 Hypothesis one

There is no significant difference in the mean responses of MVM teachers and student level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State.

Table 4.4: t-test analysis of teachers and student on the level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State.

S/N	ITEMS	SD ₁	SD ₂	t-cal	REMARK
1	The tools are always return to their rack after use	0.34	0.37	-0.40	NS
2	Students always wear proper dress in the workshop	0.49	0.78	0.89	NS
3	Students carry sharp tools like chisel, scriber, screw driver in their pockets	0.80	0.73	1.19	NS
4	Students rest on workshop machines	1.06	1.13	-0.81	NS
5	Hand files use by students are without handles	0.43	0.48	0.16	NS
6	Approved protective wears are worn by technicians	0.60	0.52	1.40	NS
7	Waste materials are properly disposed	0.56	0.75	1.52	NS
8	Dangerous chemicals are kept safe	0.65	0.61	1.47	NS
9	adequate ventilation	0.45	0.42	0.17	NS
10	The work environment is free from hazards	0.65	0.59	1.63	NS
11	Lightning are provided where necessary	0.93	0.75	-0.17	NS

Key: NS = no significant different, S= significance difference N_1 = the number of teacher, N_2 = is the number of student, X_1 =mean response of teacher X_2 =is the mean response of student, SD_1 = the standard deviation of teacher, SD_2 the standard deviation for student, t-cal= the t calculation. Table 4.5 shows the result obtain indicate that the response of the teacher and the student is not differ from both respondent which implies that the t-test accept the null hypothesis one for all the items respectively at 0.05 level of

significance is accepted, which indicate that the t-calculated value for all the item were above the t-value and below the critical value (+ or - 1.96) therefore the null hypothesis one was accepted for all the items, on the level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State for all the items in section A.

4.5 Hypothesis two

There is no significant difference in the mean responses of MVM teachers and students on the causes of occupational hazard and accident in Technical College Niger State.

Table 4.4: t-test analysis of teachers and student on the causes of occupational hazard and accident in Technical College Niger State.

S/N	ITEMS	SD ₁	SD ₂	t-cal	REMARK
12	Shock from electrical components	0.90	0.60	0.91	NS
13	Not adhering to safety rules and regulation	0.96	1.04	0.51	NS
14	Using wrong tools for a particular work	1.21	0.96	1.04	NS
15	Foot injury as a result of stepping on sharp object	1.07	1.21	1.25	NS
16	slippery floor	0.90	0.80	1.44	NS
17	Inadequate knowledge of safety rules	0.90	1.13	1.63	NS
18	Careless attitude of the technicians	0.45	0.46	0.16	NS
19	Lack of the knowledge of the work being carried out	0.66	0.73	0.52	NS
20	Injury from the use of hammer when panel beating	0.83	0.77	1.74	NS
21	power supply failure	0.45	0.48	1.47	NS

Key: NS = no significant different, S= significance difference N₁= the number of

teacher, N_2 = is the number of student, X_1 = mean response of teacher X_2 = is the mean response of student, SD_1 = the standard deviation of teacher, SD_2 the standard deviation for student, t-cal = the t calculation. Table 4.5 shows the result obtain indicate that the response of the teacher and the student is not differ from both respondent which implies that the t-test accept the null hypothesis two for all the items respectively at 0.05 level of significance is accepted, which indicate that the t-calculated value for all the item were above the t-value and below the critical value (+ or - 1.96) therefore the null hypothesis one was accepted for all the items, causes of occupational hazard and accident in Technical College Niger State for all the items in section B.

4.6 Hypothesis three

There is no significant difference in the mean responses of MVM teachers and students on the techniques of improving the occupational safety practices in Technical Colleges in Niger State.

Table 4.4: t-test analysis of teachers and student on the techniques of improving the occupational safety practices in Technical Colleges in Niger State.

S/N	ITEMS	SD1	SD2	t-cal	REMARK
22	Experience workers should be in charge of the new ones	0.30	0.70	0.36	NS
23	Loose clothing should be avoided when operating machines	0.82	0.77	-0.60	NS
24	Encouraging protective maintenance rather than the corrective maintenance in the MVM workshop	1.12	0.88	-0.68	NS

25	Having proper orientation before the use of the machines	0.67	0.60	0.26	NS
26	The work place should be kept tidy	1.04	0.82	0.33	NS
27	Use of English language on safety signs and symbols	0.99	0.78	-0.55	NS
28	There should be a provision for safe means of disposing waste materials	0.47	0.54	0.51	NS
29	Manufacturer's guide should be adhered to while operating machines	0.30	0.70	0.36	NS
30	Training and retraining of the supervisors	0.82	0.77	1.60	NS
31	Creation of safety club in schools	0.90	1.13	-0.63	NS
32	Protective guard should be fixed in all exposed machine parts	0.45	0.46	-1.16	NS
33	Use safety goggle for welding	0.66	0.73	-0.52	NS

Key: NS = no significant different, S= significance difference N_1 = the number of teacher, N_2 = is the number of student, X_1 =mean response of teacher X_2 =is the mean response of student, SD_1 = the standard deviation of teacher, SD_2 the standard deviation for student, t-cal= the t calculation. Table 4.5 shows the result obtain indicate that the response of the teacher and the student is not differ from both respondent which implies that the t-test accept the null hypothesis three for all the items respectively at 0.05 level of significance is accepted, which indicate that the t-calculated value for all the item were above the t-value and below the critical value (+ or - 1.96) therefore the null hypothesis one was accepted for all the items, on the techniques of improving the

occupational safety practices in Technical Colleges in Niger State for all the items in section C.

4.7 Summary of the findings

Findings from research question one which deal with the level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State, from the instrument used display the response of the respondent on level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges, in which the item revealed basic safety rule such as the tools are always return to their rack after use, students always wear proper dress in the workshop, students carry sharp tools like chisel, scriber, screw driver in their pockets, students rest on workshop machines, hand files use by students are without handles, approved protective wears are worn by technicians, waste materials are properly disposed, dangerous chemicals are kept safe, adequate ventilation, the work environment is free from hazards, and Lightning are provided where necessary, in which item 4 and 5 were disagreed with, findings show items in table 4.1 were basically level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in which there are still more safety regulation in the workshop to observed.

Finding from research question two which deal with causes of occupational hazard and accident in Technical College Niger State, from the response of the respondent it was observed that the following are the possible causes of occupational hazard and accident in Technical College Niger State which are Shock from electrical components, not

adhering to safety rules and regulation, Using wrong tools for a particular work, Foot injury as a result of stepping on sharp object, slippery floor, Inadequate knowledge of safety rules, Careless attitude of the technicians, Lack of the knowledge of the work being carried out and Injury from the use of hammer when panel beating while power supply failure was disagreed with, which implies that power supply failure cannot in any wise cause accident in technical colleges workshop.

Finding from research question three which deal with techniques of improving the occupational safety practices in Technical Colleges in Niger State, in which the response of the respondent on the items show that basic techniques have being put in place which can help to improve occupational safety practices in technical colleges. Techniques such as Experience workers should be in charge of the new ones, Loose clothing should be avoided when operating machines, encouraging protective maintenance rather than the corrective maintenance in the MVM workshop, having proper orientation before the use of the machines, the work place should be kept tidy, Use of English language on safety signs and symbols, There should be a provision for safe means of disposing waste materials, Manufacturer's guide should be adhered to while operating machines, Training and retraining of the supervisors, Creation of safety club in schools, Protective guard should be fixed in all exposed machine parts and Use safety goggles for welding. Happened to the techniques applies to improved occupational safety.

Finding from hypothesis one which was set to evaluate neither there is no significant difference in the mean responses of MVM teachers and students level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges

in Niger State, it was observed in their response that teachers response is not differ from the response of students on the level of compliance of safety rules and regulations in Motor Vehicle Mechanics Workshop in technical colleges in Niger State.

Findings from hypothesis two which was set to evaluate neither there is no significant difference in the mean responses of teachers and students on the causes of occupational hazard and accident in Technical College Niger State. It was observed in their response that teachers response is not differ from the response of students. It indicates that the item mention in table 4.5 to the causes of occupational hazard and accident in Technical College Niger State.

Finding from hypothesis three which was set to evaluate neither there is no significant difference in the mean responses of teachers and students on the techniques of improving the occupational safety practices in Technical Colleges in Niger State. it was observed in their response that teachers response is not differ from the response of students which show that the item mention in table 4.6 are basic techniques of improving the occupational safety practices in Technical Colleges in Niger State.

4.8 Discussion of major findings

From the result of the findings the occurrence of the workshop accidents leads to bums, cuts, deformities and loss of life. The occurrence of the workshop accident in the school workshop will tends to limit the main aim of the school settings, workshop practices and participation of the students. The school is known to be a place of gaining knowledge and not a Place of accidents either minor or major as a result of carelessness and in adequate safety to ensure that the school is still regarded as an institution where students

go to gain knowledge and skills.

Findings from research questions it was observed that the student should practice safety in the workshop. In addition, the school and the ministry of education must constantly carefully state the safety and its weakness in the implementation of existing safety practices accidents which are caused by the use of hand tools and machines can easily be prevented if they are properly managed and maintained from time to time. Safety has been related to danger; a child is always warned to stay out of danger, protect him or her from colliding into people and also to avoid causing trouble that will endanger the society at large. All this is done as a means of kicking against danger thereby embracing safety. And this has left a good influence that will nurture the child to be safe at all times in his or her life encounter. Accidents can be reduced to minimum or avoided if the students are aware of safety measures and precautions to take in respect to safety and these is in line with what Jain said 2008, safety in school workshop is very important, to avoid the process of teaching and learning being disrupted and reduced in terms of effectiveness. And this demands the cooperation of teachers and students. Usually the teacher has to provide the students with sufficient information, giving an explanation on what safety practices mean and the necessary steps that should be taken when the practical work commences.

Findings from hypothesis, It should be noted that safety is the priority of the teacher and it is also the responsibility of the teacher to deal with any sort of accident which occurs in the workshop under their supervision. Therefore workshop safety entails handling, maintenance and correct use of workshop tools has to be considered to avoid penalizing

students in the later days or years. Safety also means the real situation in the protection of physical, social, financial, political, psychological, mood, work, education and other matters involving damages. When carrying out activities in the workshop, safety aspects that needs to be monitored first is safety, machinery, equipment and other colleagues and these was in line with what Sara said in 2004. To observe and on with the safety rules in the workshop, any risks which has to do with casualties, senses, damage to equipment and machines should be avoided Teachers should therefore lead, guide and move the students to build the desired attitude. While engaging in activities or work in a workshop, safety regulations and workplace safety laws should be known, studied and observed for safety is the responsibility of each Student. Safety awareness is not a priority to only students participating in workshop activities, but to other fellow students that are passive and to the students who are not present in the workshop, the instructor, the machines used and the environment. Safety awareness comes as a result of the desire to know and understand the use of workshop tools that are available. Tight corners and narrow spaces in the workshop when occupied by large number of students disrupt workshop activities and the workshop safety.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, summary of the procedure, analysis of the procedure based on the research questions, the conclusion recommendation based on the findings drawn from the study, and suggestions for further research is discussed.

5.1 Summary of the study

The research was conducted to assess safety practices in technical college students in MVMW in Niger state; the study used a survey design method and sought to assess safety practices of technical college students in MVMW in Niger state. Three research Questions were generated based on the purpose of the study, the literatures related to the study were also reviewed. A structured questionnaire was developed by the researcher. The instrument was in four sections and it was validated and used to get information from respondents. The population of the study was 1194 people, which are made up of 1160 MVM students and 34 MVM Teachers. A sample of 29 MVM students, 6 MVM teachers in Government technical college Eyagi, Bida, 30 MVM students, 9 MVM teachers in Government Technical College Minna, 25MVM students, 4 MVM teachers in Government technical College Kontagora and 24 MVM students, 4 MVM teachers in Government technical College new bussa respectively, each from the department of MVM from the four, zones in Niger state. A total of 131 questionnaires were distributed with a 100 % return rate.

Data collected on the structured questionnaire were analyzed using mean statistic.

Unsafe acts of students were discovered to cause most accidents in MVMW, such as

slippery floor, inadequate knowledge of safety rules. The rate of occurrence of accidents can be reduced if proper maintenance and assessment of workshop tools are carried out. Safety orientation to new students before they start carrying out operational activities in MVM Workshop has been discovered as the main strategies of inspiring students' compliance to safety enforcement in MVM workshop for technical colleges in Niger state.

5.2 Implication of the study

From the result gotten from the analysis of data, some implications of the study have been revealed. The MVM students are now acquainted with more knowledge about workshop accidents, the causes of these accidents, common types of accidents occurring in the workshop and the strategies of avoiding and preventing the accidents from occurring. Technical teachers and workshop instructors will be able to state out the strategies to be carried out to ensure students' compliance to safety practices in MVM workshops. The management of technical colleges will be able to save money in regards to the provision of wasted materials, damaged tools and equipment which is due to occur as a result of accidents in the MVM workshops. This will also reduce the cost of expenses on the supply of first aid and consumables if there is adequate assessment and maintenance of the MVM workshop.

5.3 Conclusion

The achievement of the stated objectives in ensuring students' awareness to safety practices in MVM workshops solely depends on the research questions of the study.

The respondents agreed that most of the items in research question one were in

compliance in the safety rules and regulations in workshop in technical colleges in Niger state, except with two items where they disagreed

The respondents agreed that most of the out listed items in research question two were the causes of Occupational hazard and accident, in MVM workshop in technical colleges in Niger State. Except with one item where they disagreed.

The respondents agreed that all the out listed items in research question three were the strategies to be adopted in order to improve on occupational safety practices in MVM workshops in technical colleges in Niger state.

5.4 Recommendations

Based on the findings of this study and their implications, the following recommendations have been taken into consideration

1. Schools administration should ensure that students comply with safety rules and regulations in MVM workshop in technical colleges in Niger state.
2. School principals should ensure that occupational hazard and accident in MVM workshop in technical colleges in Niger state are corrected.
3. Administrators should ensure that students follow the strategies listed so that safety practices in MVM workshop in technical colleges in Niger can be improved.

5.5 Suggestion for further research

The following are suggested for further research for other researchers to look into

- i. Assessment of maintenance practice of automobile workshop equipment and facilities in vocational and technical colleges in Niger state.
- ii. Assessment of accident implication in motor vehicle mechanic workshop in technical colleges in Niger State.

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QUESTIONNAIRE

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION INDUSTRIAL AND TECHNOLOGY EDUCATION

A questionnaire for the Assessment of Safety practice in Motor Vehicle Mechanic Workshop in Technical Colleges Niger State.

INTRODUCTION: This questionnaire seeks for your opinion about the assessment of Safety Practice in Motor Vehicle Mechanics Workshop in Technical College Niger State. Please complete this questionnaire faithfully as and sincerely tick (✓) the column that best represent your perception about each item concerning the above topic.

PART 1

Status Teacher () Student ()

A (four) 4-point scale is used to indicate your opinion, () the word which describes your agreement as shown below:

STRONGLY AGREE SA = 4 points

AGREE A = 3 points

DISAGREE D = 2 points

STRONGLY DISAGREE SD = 1 points

PART 2

SECTION A

1. What is the level of compliance of safety rules and regulations in Motor Vehicle

Mechanics Workshop in technical colleges in Niger State?

S/N	ITEMS	SA	A	D	SD
1	The tools are always return to their rack after use				
2	Students always wear proper dress in the workshop				
3	Students carry sharp tools like chisel, scriber, screw driver in their pockets				
4	Students rest on workshop machines				
5	Hand files use by students are without handles				
6	Approved protective wears are worn by technicians				
7	Waste materials are properly disposed				
8	Dangerous chemicals are kept safe				
9	adequate ventilation				
10	The work environment is free from hazards				
11	Lightning are provided where necessary				

SECTION B

2. What are the causes of occupational hazard and accident in Technical College Niger State?

S/N	ITEMS	SA	A	D	SD
1	Shock from electrical components				
2	Not adhering to safety rules and regulation				
3	Using wrong tools for a particular work				
4	Foot injury as a result of stepping on sharp object				
5	slippery floor				
6	Inadequate knowledge of safety rules				
7	Careless attitude of the technicians				
8	Lack of the knowledge of the work being carried out				
9	Injury from the use of hammer when panel beating				
10	power supply failure				

SECTION C

3. What are the techniques of improving the occupational safety practices in Technical Colleges in Niger State?

S/N	ITEMS	SA	A	D	SD
1	Experience workers should be in charge of the new ones				
2	Loose clothing should be avoided when operating machines				
3	Encouraging protective maintenance rather than the corrective maintenance in the MVM workshop				
4	Having proper orientation before the use of the machines				
5	Use of English language on safety signs and symbols				
6	There should be a provision for safe means of disposing waste materials				
7	Manufacturer's guide should be adhered to while operating machines				
8	Training and retraining of the supervisors				
9	Creation of safety club in schools				
10	Protective guard should be fixed in all exposed machine parts				
11	Use safety goggle for welding				
12	The work place should be kept tidy				