

**ASSESSMENT OF THE FUNCTIONALITY AND UTILISATION OF MOTOR
VEHICLE MECHANIC TRADE TEACHING TOOLS AND EQUIPMENT IN
TECHNICAL COLLEGES IN OSUN STATE**

BY

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2016/1/62475TI

**DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION
FEDERAL UNIVERSITY TECHNOLOGY, MINNA, NIGERIA**

APRIL, 2023

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**A PROJECT SUBMITTED TO THE SCHOOL OF SCIENCE AND TECHNOLOGY
EDUCATION, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN
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(AUTOMOBILE TECHNOLOGY)**

APRIL, 2023

DECLARATION

I OLADIMEJI, Blessing Ayodeji Matric No: 2016/1/62475TI 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.

.....
OLADIMEJI, Blessing Ayodeji
2016/1/62475TI

.....
Signature & Date

CERTIFICATION


This project has been read and approved as meeting the requirement for the award of BTech degree in Industrial and Technology Education (Automobile Technology) of Federal University of Technology, Minna.

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External Examiner



Signature & Date

DEDICATION

This work is dedicated to my mother, who inculcated hard working in me, her disciplinary life has been my source of inspiration and strength throughout this program.

ACKNOWLEDGEMENTS

The researcher's gratitude goes to the Immutable God for His faithfulness. The researcher appreciate his supervisors Dr. M. AbdulKadir for their time to read, correct and contribute toward the success of this work. The researcher acknowledges the academic and non-academic staff of the Department of Industrial Technology Education and for their immense contributions toward success of the work.

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ABSTRACT

This study is aimed at investigating the tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State. The study explores the assessment of availability of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State, functionality of the available tools and equipment in teaching and learning motor vehicle mechanic practical in technical colleges in Osun State and utilization of instructional facilities in teaching and learning motor vehicle mechanic practical in technical colleges in Osun State. The study will cover three (3) technical colleges in Osun State. The technical colleges are: Osun State College of Technology, Federal Science and Technical College and Government Technical College. The targeted population for this study will be 113 respondents comprising of 89 motor vehicle mechanic teachers and 24 workshop technicians from three (3) technical colleges in Osun State. A constructed questionnaire titled “Motor Vehicle Mechanic Trade Teaching Tools and Equipment Questionnaire (MVMTEQ)” was used to get the desired information from the students. Responses from the questionnaire were analyzed using descriptive statistics mean and standard deviation was used for the research questions. While t-test was used for the hypotheses testing at 0.05 level of significance. The findings of the study revealed that all the itemized tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State. There was no significant difference in mean response of teachers and workshop technicians on level of availability, functionality, and utilization. It was revealed that all the itemized tools and equipment like drilling and screw cutting equipment are not properly functioning while the Lubrication Bay / Tyre and Wheel Service equipment, and other utilities are well functioning to a great extent for teaching motor vehicle mechanic trade in technical colleges in Osun State. And finally, all the itemized tools and equipment are moderately utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State. The researcher recommends that: Government should provide qualified teachers, classrooms, workshop, equipment and necessary facilities in technical Colleges for teaching motor vehicle mechanic trade, adequate provision and functioning use of equipment and tool materials for high academic performance and Technical Colleges teachers and workshop technicians should be encouraged to always utilize the equipment and necessary tools for teaching motor vehicle mechanic trade.

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CHAPTER ONE

1.0

INTRODUCTION

1.1 Background to the Study

As prime movers of people and goods, automobiles contribute daily to economic and social systems. The automobile, commonly known as a motor vehicle or car, is a composite of many complex systems with a sophisticated group of technologies assembled. Keys (2018) stated that today's cars are factory equipped with computer systems that have more intelligence than the United States' National Aeronautics and Space Administration (NASA) spacecraft sent to the moon. Automobiles now use sophisticated computer technology, advanced wiring, intricate circuitry, and complex engineering (Okah-Avae, 2015).

The automobile today is controlled by various electronic sensors, actuators, circuits, and computers. Electronics control is approximately 75 percent of modern automobile's operation (Schweitzer, 2016). Today's car is a rolling computer; as there are 30 to 100 microprocessors in a car controlling various systems. These systems require routine diagnosis, maintenance, and service (Shetty and Kolk, 2017). The maintenance of the numerous subsystems of modern automobiles has become highly challenging and expertise demanding.

The automobile maintenance personnel, commonly known as Motor Vehicle Mechanics (MVM), must therefore be equipped with the relevant knowledge, practical skills, and the right attitude for effective maintenance of modern automobiles, owing to the influx of automobiles into Nigeria and the challenges of maintaining them. Today's motor vehicle mechanic is expected to diagnose, service, and completely repair any problem in the automobile. He/she must be specially trained

and equipped for on-board diagnostic (OBD-2) technology to avoid potential errors in diagnosing car trouble codes and making appropriate repairs (Fenker, 2014).

The motor vehicle mechanic faces the challenges of understanding each of the systems found in the automobile and the interrelationship of these systems, as well as, the need to stay current with changes as new models appear every year (Harshama *et al.*, 2016). They must understand not only the parts, nomenclature, and operation, but also understand the diagnosis and service procedure for each system in the vehicle. United States Bureau of Labor Statistics (USBLS) stated that motor vehicle mechanics must have an increasingly broad knowledge of how vehicles' complex components work and interact. They also must be able to work with electronic diagnostic equipment and digital manuals and reference materials. Motor vehicle mechanics also need to have: an interest in mechanical/electronic systems in a motor vehicle, good problem-solving ability, good vision, hearing and sense of smell, manual dexterity, and mechanical aptitude, ability to communicate well in English, physical fitness, and strength, ability to drive a range of vehicles, ability to read technical diagrams and illustration, have concern for safety and responsible work attitude; and in keeping up to date with technology (Etuk and Asukwo, 2015). The above requirements, therefore, not only make the training of motor vehicle mechanics highly tasking and expertise demanding, but also require a very rich practical with a lot of equipment and tools for effective and efficient implementation.

Equipment and tools are vital in the teaching and learning process. One major index for measuring the successful implementation of any practical work is the provision and management of the equipment and tools available for such programs (Dokubo and Dokubo, 2013). It is a very good means of measuring the standard and quality of the education to be provided, Nzekwe stressed. Practical work are specifically meant for direct teaching and learning. They include classrooms,

classroom seats, workshops, laboratories, internet equipment and tools, libraries, equipment, chalkboard, audio-visual learning equipment, among others (Dhall and Solanki, 2017). These equipment and tools bear directly on the teaching-learning process. They enable the teacher to carry out his/her work well and also help the learners to learn effectively (Audu *et al.*, 2013); therefore, they are an integral component of the conditions of learning.

The practical work offer the reality of experience, provide visual aspects to a process or technique, facilitate the understanding of abstract concepts, and provide the opportunity for the learner to manipulate (Asiyai, 2012). Alciatore and Histan (2015) posited that, the quality of training that trainees get bears on direct relevance to the availability or the lack of equipment and tool and overall atmosphere where the learning takes place. According to the Nigerian Educational Research and Development Council (NERDC, 2015) , the MVMW program is inherently workshop based; and therefore, calls for an adequately equipped automobile workshop in each school that offers the course.

Technical colleges are regarded as the principal vocational colleges in Nigeria. They give full vocational training intended to prepare students for entry into the various occupations (Akele, 2011). According to Abdulkadir (2018) the responsibilities of technical college education in Nigeria include: provision of full time or part-time courses of instruction and training in technology, applied science and commerce, in such other field of applied learning, relevant to the needs of the development of Nigeria in the areas of industrial, commercial and vocational agriculture, professional studies in engineering and other technologies and perform such other functions as in the opinion of the society as may serve to promote the objectives of the technical colleges.

National Policy on Education (2014) made the production of craftsmen, artisans and other sub-professional skilled personnel the responsibility of technical college education and maintained that trainees completing technical college programmes shall have three options: Secured employment either at the end of the whole course or after completing one or more modules of employable skill, Set up their own business and become self-employed and be able to employ others and Pursue further education in advance – craft/technical programme and in post-secondary (tertiary) technical colleges such as science and technical colleges, polytechnics or colleges of education (technical) and universities. However, the attainment of these goals is largely dependent on the effective workshop equipment and tools functionality and utilisation.

Functionality is concerned with making instructional equipment and tools to serve educational purposes in the school for teaching and learning under the best condition and effectively utilized. Utilization of available and functional equipment and tools in teaching motor vehicle mechanics promotes meaningful communication enhances effective teaching, increases the interest of learners and motivate individualized instruction in which learning is assured (Ukoha, 1996). This implies that, the ultimate goal of utilizing equipment and tools is to facilitate teaching and learning.

Utilization is the process of making use of available equipment and tools to promote meaningful communication and enhance effective teaching and learning. Utilization is the proportion of the available time (expressed usually as a percentage) that a piece of equipment or instructional facility is operating. It is the ratio of time an instructional facility is busy (working) divided by the time it is available. Utilization of equipment and tools involves making teaching and learning of subjects more practical and effective; utilization gives correct representation to the abstract ideas, thereby making their meaning clearer. And proper utilization of equipment and tools serves as a useful purpose in promoting understanding to concept and principles.

1.2 Statement of the Research Problem

Technical colleges are mainly established for the training of students to acquired practical skills, knowledge and attitude. However, the major goals of technical college education is to produced efficient and relevant craftsmen and women that will promote and industrial development in the area of maintenance, goods production and general services most especially motor vehicle (Abdulkadir, 2013). Anaele (2012) also opined that the goal of technical college education is develop saleable skills in youths in order to make them useful to themselves, society and also become labour assets in the industries.

Consequently, the introduction of Automobile Mechanical Works in technical colleges is expected to develop manpower that can handle automotive repairs upon their graduation. With this, so many youths can be taken off the streets. This is in line with Ochogba and Amaechi (2018) that the acquisition of technical skills which include Automobile Mechanical Works skills, encourages self-employment, provides diverse job opportunities, employment, provide the required job attitude and the ability to take up contracts. This means that students who acquire Automobile Mechanical Works skills in technical colleges can be self- employed and the significance of this according to Ochogba and Amaechi (2018) is that it will re-orient youths thereby making them shun criminal and other social activities that could pose as security threat to the society.

Incidentally, these technical colleges appear not fulfilling these objectives as noted by Enemali (1994) who lamented technical colleges are haphazardly managed, they lack the ability to equip students with the requisite skills, knowledge and attitude needed for gainful employment. Also commenting on the performance of technical colleges in the area of skill development and workshop equipment and tools, Hassan and Hassan (2016) stressed that some of the available

equipment and tools have been grounded and overstretched. It is probable that workshop equipment and tools functionality and utilisation adopted by the teachers may be responsible for these. Therefore, the problem of this study is to assess the current workshop equipment and tools functionality and utilisation in the technical colleges of Osun State.

1.3 Aim and Objectives of the Study

The aim of this study is to assess the tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State.

Specifically, the study determined:

1. The availability of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State.
2. The functionality of the available tools and equipment in teaching and learning motor vehicle mechanic practical in technical colleges in Osun State.
3. The utilization of instructional facilities in teaching and learning motor vehicle mechanic practical in technical colleges in Osun State.

1.4 Significance of the Study

The result of this study will be of immense benefit to the National Technical Board Education (NBTE), Management of Technical Colleges, of, lecturers, instructors and automobile technologists, the industries, graduates of automobile technology and automobile students.

The National Technical Board Education (NBTE) will benefit from the finding of the study, as the study is expected to state the instructional facilities that are available in the colleges as well as indicate how often they are utilized for instructional purposes.

Management of Technical Colleges will also use the findings of this study to suggest to the tertiary colleges administration, areas for improvement in provision of instructional facilities in automobile technology. And understanding of the result of this study would help the management of technical colleges to evolve better ways of utilizing the available facilities for improved performance of students. This would help to ensure that the graduates acquire a level of training which will enable them to be self-reliant, self-sufficient and employable by self or industries.

Lecturers, instructors and technologies of automobile technology would also benefit from the findings of this study by using adequate functional facilities to equip graduates with the skills required by the labour market, that would help to match skills with the labour demanded by the companies and industries. Hence, the attitude of floating in the labour market by graduates of automobile technology would be reduced.

Managers of the industries would also benefit from the findings of the study, since the improvement of automobile graduates would increase production, effectiveness and efficiency in the industries. The result of the study would help to increase the confidence of industries in the graduates and colleges.

The graduates of the automobile technology would also benefit from the findings of this study, as the automobile graduates would be trained/equipped with functional facilities that would provide them with skills that can enable them to be gainfully employed in industries and civil service or through self-employment.

1.5 Scope of the Study

The study will be delimited to the extent to which tools and equipment are available for teaching motor vehicle mechanic trade, how functional the tools and equipment for teaching motor vehicle

mechanic trade and the extent to which tools and equipment are utilised for teaching motor vehicle mechanic trade in technical colleges in Osun State.

1.6 Research Questions

The following research questions guided the study

1. To what extent are the tools and equipment available for teaching motor vehicle mechanic trade in technical colleges in Osun State?
2. How functions are the tools and equipment for teaching motor vehicle mechanic trade in technical colleges in Osun State?
3. To what extent are the tools and equipment utilised for teaching motor vehicle mechanic trade in technical colleges in Osun State?

1.7 Research Hypotheses

The following null hypotheses which were tested at 0.05 level of significance will guide the study

1. HO₁: There is no significant difference in the mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State
2. HO₂: There is no significant difference in the mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are functioning for teaching motor vehicle mechanic trade in technical colleges in Osun State
3. HO₁: There is no significant difference in the mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are utilize for teaching motor vehicle mechanic trade in technical colleges in Osun State

CHAPTER TWO

2.0

LITERATURE REVIEW

2.1 Conceptual Framework

2.1.1 Motor Vehicle Mechanic

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. According to Doyin (2016) MVM is a vocational education program, which is aimed at preparing one for a specific occupation. Vocational programs are generally designed to prepare individuals for a gainful employment as semi-skilled or skilled worker or technicians or sub-professional in recognized occupation and in new emerging occupations or to prepare individual for enrolment in advanced technical education program (Ugwaja, 2018). Motor vehicle mechanics work at technical college level consists of three components/subjects grouping as follows: Service station mechanics work, Engine maintenance and refurbishing, and Auto electricity. The program of MVM work in Nigeria technical colleges is designed to produce competent motor vehicle craftsmen for Nigeria technical and industrial development (Aruku,2017). Therefore, teachers teaching MVM at technical college level must acquire the right skills to impart to the learners in order for them to acquire the right skills for gainful employment. However, the objective of MVM work is to enable graduates to test, diagnose, service and repair any fault relating to conventional motor vehicle main assembly units and system to the manufacturers specification (NBTE, 2018). MAET (2016) stressed that motor vehicle mechanic students need the following attributes: an interest in mechanical/electronic system in motor vehicle, good problem solving ability, good vision, hearing and sense of smell,

manual dexterity and mechanical aptitude, ability to communicate well in English, physical fitness and strength, ability to drive a range of vehicles, ability to read technical diagrams and illustration, have concern for safety and responsible work attitude; and in keeping up to date with technology. According to Abdulkadir and Olaitan (2017) teachers teaching MVM work should equip the technical students with necessary theoretical knowledge and practical skills that will enable them secure paid employment, be able to set up their workshops and be selfemployed and even employ others. It necessarily follows that teachers who actually implement the curriculum of technical colleges ought to be well prepared. Crews and Dickerson (1997) seriously noted that teachers' quality is a strong predictor of student's quality. More so, that it is widely acknowledged that no education system can rise above the quality of its teachers". There is therefore great doubt as to the adequacy of MVM teachers, in terms of quality, now handling the subject in our various technical colleges. The committees of the Federal Republic of Nigeria (FRN, 2014) observed that the present crops of teachers teaching MVM in the technical colleges are grossly incompetent and incapable of imparting knowledge and skills efficiently and effectively to the learners. Some recent studies carried out in the area of teacher quality for the technical colleges and secondary schools in some states of the federation indicate negative disposition (Nduanya, 2016, Okeke, 2018).

2.3. Facilities Utilized

Facilities utilized in Teaching Automobile Technology are equipment, tools and materials that the teacher uses to illustrate, emphasis and explain his or her lesson. According to Finch and Crunkilto, (1999); penny and Fox, (2017), instructional facilities in teaching automobile courses makes teaching easier and less stressful for both teachers and students. They provide opportunities for private study and reference. The learner's interest and curiosity is increasingly stimulated. Instructional facilities used in teaching automobile courses are relevant materials or facilities

utilized by an automobile teacher during instructional process for the purpose of making the content of the instructions more practical and less vague (Mkpa, 2016) and (Onyejemezi, 2018). It is necessary to note that instructional facilities fosters effective communication, and guarantees understanding in learning (Ndomi, 2016). However, according to Yakubu (2017) and Uzoagulu (2020), instructional facilities are means of making teaching and learning process easy, more meaningful and understandable in technical courses. This implies that, instructional facilities are devices that are used in arousing or stimulating learning in automobile courses. Instructional facilities in teaching automobile courses are the essential concrete features that enable automobile teachers teach effectively in the workshops and classrooms, and could also be classified as tools (Uwaifo, 2019). In Nigeria, tools in industrial technical education are grouped together. According to National Universities Communication, NUC (2017), they include saws, pliers, files, chisel, screw drivers, work bench, engineers vice, hacksaw, frames, hand files, drill bits, try square, metric tape, stock and dies etc, and they are classified as hand tools. The lathe, pillar drills, grinders, power saw, combination planners, rolling, shaping and 22 22 milling machines are classified under machine tools. These tools and equipment help to actualize instructions of automobile courses. Larson (2017) emphasized that the school building could be referred to as instructional facilities since its function is to house and protect other instructional facilities inside it. The author further stated that, instructional facilities helps the teacher to convey intended message, understands, retains and applied experience gained to teach overall taxonomy of educational goals. This means that, instructional facilities in teaching automobile courses are those items which the teacher falls to for help in his goal of seeking activities that would help him perform the job of instruction. Instructional facilities used in teaching and learning of automobile technology are materials, objects or things the teacher can use in the classroom while teaching practical courses. According

to Puyate (2020); Uzokwe (2017) and Towe (2016), instructional facilities are important for effective teaching and learning of practical courses. Thus, they help the learner to learn without stress. It implies that, teaching courses that are practically oriented needs the demonstration of skills by applying the available instructional facilities involved.

Availability of Instructional Facilities in Teaching Motor Vehicle Mechanic in Tertiary Institutions

Tools and equipment are instructional facilities/devices which the teacher uses to communicate effectively with the student. They are devices that must be available for the teacher to use while teaching to make lesson meaningful and impartful. According to Dahar and Ahmad, (2018) instructional facilities are print and non- print items that are designed to impart information to students in the education process. Adeyanju (2016) and Chike (2017) agreed to the fact that teaching facilities apart from leading them to practical learning are equally essential for occupational job performance for self-reliance.

The availability of appropriate automobile facilities enhances students learning by allowing them to be involved in demonstrations, and practice to build their skills. However, the use of automobile tools, equipment and machines make it possible to bring in adopted and valuable resource persons into the classroom who can operate and describe the various tools, equipment and materials. They help to lessen the repetition words without grasping their meaning and add variation to teaching method. The available facilities are what the teacher uses to compliment his or her teaching. The availability of instructional facilities plays a vital role in the teaching and learning process. It enhances the memory level of the students. According to Okoro (2019) and Raw (2003) instructional facilities are the sum total of every thing used directly or indirectly for the purpose of

educational training to support, facilitate and encourage the acquisition of knowledge, competence skill and technical, known., how. The unavailability of these tools, equipment, machines/facilities makes teaching ineffective, time consuming and boring (Onyegegbu, 2016), (Umar and Abdullahi, 2018). This implies that, the success of any practical courses depends on the availability of the necessary facilities, the provision of the facilities/tools and the effective utilization of facilities should be given priory attention to improve the carrying capacity in the tertiary institutions.

Functionality of Instructional Facilities in Teaching Motor vehicle mechanic in Tertiary Institutions

To optimize the performance under the best condition, instruction and teaching are expected to be adequately and sufficiently provided with relevant instructional facilities. Where these facilities are non in existence or inadequate, effective teaching and learning cannot be proficiently carried out. According to Aina (2000); Onyejemezi (2001) and Okoro (2019) agreed that the instructional facilities are needed for effective instruction and that it should be the replica of what is obtainable and relevant to the occupational skill which the student must appreciate their importance. This means that, the facilities should be modern and functional so that the teacher and learner can benefit from it. Ajayi (2018), Ololube (2016) the modern facilities such as adequate classrooms, workshops, tools and equipment, laboratories , computers, and electricity are required in appropriate quantity and quality, and all should be functional for teaching and learning to be effective in automobile courses.

The development of capacity, potentials, self-actualization, appreciation and application of knowledge gained to solve practical problems in the fast technological changing society cannot be achieved if equipment, tools and functional devices/facilities are not adequate, functional and

adapted to the demands of the technological and scientific age in which automobile students have to live and function (Onyegegbu, 2018). According to Umunadi, (2017) due to the technological changes, instructional facilities and the total environment where automobile courses are given must be adequately equipped and functional to reflect the actual working environment where graduates will work after schooling. This implies that, facilities should suite and serve the purpose for which it is used.

Since adequate instructional facilities play pivotal role in the actualization of the educational goals and objectives by satisfying the physical and emotional needs of the staff and students, the available facilities should be functional (Asiabaka, 2018 and Fenker, 2018)According to Asiabaka (2018), functional instructional facilities are materials designed to serve educational purposes in the school and learning. They are used:

- i. To illustrate concepts
- ii. To provide opportunity for firsthand experience.
- iii. For experimentation and demonstration.
- iv. For scientific investigation and discovery.
- v. To provide diversity of thoughts
- vi. For observation and inquiry.
- vii. For development of scientific attitudes and skills.
- viii. To increase efficiency and effectiveness and
- ix. To make abstract real objects.

According to Okorie (2000), the function of practical training, therefore, proceeds from the assumption that gap between the required and actual performance of skills in industrial education calls for a bridge via training with instructional facilities, is the result of inadequacies in knowledge, skills and attitudes. This means that, for a skill to be acquired there must be functional training facilities.

Utilization of Instructional Facilities in Teaching Motor vehicle mechanic in Tertiary Institutions

The availability and utilization of instructional facilities does not guarantee effective communication and effective teaching, but instead proper utilization, careful selection and skillful handling by the teachers, renders the usefulness of instructional facilities to the teaching and learning process. According to Uwaifo, (2019) the availability and utilization of instructional facilities in teaching automobile courses plays a very important role in making the teaching and learning of the subject more effective. Ukoha, (2017) the ultimate goal of utilizing instructional facilities/materials, tools and equipment is to facilitate teaching and learning. The proper utilization of these facilities promotes meaningful communication, enhances effective teaching, encourages the interest of learners and motivates individualized instruction in which learning is assured. This implies that, instructional facilities are important in teaching and learning just as magic cubes, tomatoes and other ingredients are important to good meal. The correct use of instructional facilities often gives correct representation to the abstract ideas, thereby making their meaning clear and pleasant. According to Uwaifo (2019), proper utilization of facilities serves a useful purpose in promoting understanding to concepts and principles. The utilization of relevant equipment, materials, tools or instructional facilities in teaching automobile courses facilitates

learning and enhances student's achievement (Awobodu, 2016). Also, according to Gujjar, Khan, Baig, Ramzam and Saifi, (2018), adequate, functional and proper utilization of instructional facilities improve the performance and output of the institutions. This means that, institutions that are fully equipped with functional facilities give a better result when properly used as compared to the institutions having inadequate instructional facilities.

Theoretical Framework

The theoretical framework for this study is base on human capacity theory and vocational theory.

The Human Capacity Theory

This theory was postulated by **Schultz (1961)** cited in Iyunad (2008). The theory maintained that education is not supposed to be viewed simply as a form of consumption but rather, as a productive investment. **Schulz (1961)** argues that education does not only improve the choice available to individual, but that educated population provides the type of labour force necessary for industrial development in education, automobile technology inclusive. Skills capacity based at the micro and macro levels. Such investment is seen to provide returns in the form of individual skills acquisition benefit and its application for economic success and achievement. This implies that automobile technology is a productive education rather than consumer's education. That automobile technology provides individuals with skills acquisition benefit and application for economic success, hence when the individual in the micro setting are self-reliant the macro economy becomes buoyant and stable. It also implies that automobile technology education can bridge the gap between people without job and without hope. If one is able to acquire training and skill in automobile technology, employment is guaranteed. On the other hand, a country without enough manpower in industrial technical area will continually suffer the problem of unemployment.

Vocational Theory

This theory was developed by Charles A. pressor in 1949 were cited in Okoro, (2019),Okoro, (2019) and Asuquo (2005) stressed that this theory is very important in leaning industrial and vocational education courses. The theory maintained that, Vocational education will be efficient in proportion as the environment in which the learner is trained is a replica of the environment in which he must subsequently work. Effective vocational training can only be given where the training jobs are carried out in the same way, with the same operations, the same tools and the same machines as in the occupations itself. Vocational education will be effective in proportion as it trains the individual directly and specifically in the thinking habits and the manipulative habits required in the occupation itself. Vocational education will be effective in proportion as it enables each individual to capitalize his or her interests. Aptitude and intrinsic intelligence to the highest possible degree. Vocational training will be effective in proportion as the; specific training experiences for forming right habits of doing are those of the finished skills necessary for gainful employment. For every occupation there is a minimum productive ability, which an individual must posses in order to secure or retain employment in that occupation. If vocational education is not carried to that point with that individual it is neither personally nor socially effective. Vocational education will be socially efficient in proportion as in its methods of instruction and its personal relations with learners; it takes into consideration the particular characteristics of any particular group which it serves.

This theory is apt in guiding instructional efforts of lecturers and technologists in automobile technology programmes in Nigerian tertiary institutions. This theory have varying implications in the way and manner automobile courses are taught and the student's formation of process thinking and doing habits. If this theory is discountenanced, students will be ill equipped to gain or retain

employment on graduation. It also implies that, automobile students should be trained in a replica environment in which the students must subsequently work after graduation, and it also based on standard.

2.3 Review of Related Empirical Studies

Olabiya, Adigun and Adenle (2008) carried out a study on Assessment of the Adequacy of Training Facilities used for Vocational and Technical Education in Colleges of Education in South West Nigeria. The study was designed to assess the training facilities used for industrial technical/vocational education programme in South West, Nigeria Colleges of Education. A survey design approach was adopted. The respondents of the study consisted of 75 lecturers and 40 instructors, making a total of 115 respondents. Three research questions were answered and two null hypotheses were tested at 0.05 level of significance. Mean and standard deviation were employed to answer the research questions; t-test was used to test the null hypotheses. A structured questionnaire containing 39 items was used for data collection. The study revealed among others that colleges of education lack necessary training facilities such as hand tools, portable power tools, relevant text books and machines. Consequently, the study recommended among others that management and social factors to facilitate learning and effective teaching of industrial technical education will involve use of many techniques and strategies. The previous study is related to this study because both of them are focused on teaching facilities. However, the present study differ from the previous study because the previous study centered on vocational technical education programme in College of Education in South West Nigeria while the present study is purely on functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State

Essien (2016) carried out a study on the Evaluation of Technical Education Programmes in Akwa Ibom State. A population of 235 schools drawn from ten educational zones, six research questions, one hypotheses and 42- items questionnaire guided the study. The items were administered to 235 schools but 208 were completed and returned. Data was analyzed with mean and t-test. The result of the study showed that more qualified technical teachers should be employed; ministry of education should supervise the purchase, supplied and maintenance of technical facilities. Infrastructural facilities were inadequately supplied in schools. The previous study is related to this study because both of them are focused on instructional facilities. However, the present study differs from the previous study because the previous study centered on Technical Education Programmes in Akwa Ibom State while the present study is purely on functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State.

Umunadi (2017) carried out a study on teacher utilization of instructional equipment and materials in teaching basic electricity in urban and rural technical colleges. The study investigated the availability and usage of equipment and materials in the teaching of basic electricity in urban and rural Delta state (Nigeria) technical colleges. The study's sample contained 150 students from urban schools and 50 students from rural schools to make a total sample of 200 students. Questionnaire was used for the data collection. Percentages, mean and standard deviation were used to analyze research results and z-test statistic was used to test the hypotheses. The hypotheses were tested at a 0.05 level of significance. The findings revealed among other things, that there inadequate basic electricity equipment and consumable materials available in the technical colleges. In addition, teachers in technical colleges often fail to properly use the equipment, tools and materials needed in the teaching of the subject. Based on these findings, it was recommended

that Government should provide qualified teachers, classrooms, workshop, equipment and necessary facilities in technical Colleges for effective teaching and learning of basic electricity. The previous study is related to this study because both of them focus on teachers' utilization of instructional facilities. However, the present study differ from the previous study because the previous study centered on Basic Electricity in Urban and Rural Technical Colleges in Delta State while the present study is purely on functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State

Dahar and Faize (2018) carried out a study on effect of the availability and the use of instructional material on academic performance of students in Punjab (Pakistan). The study investigated the effect of the availability and the use of instructional materials on academic performance of students in Punjab (Pakistan). The population for the study comprised all secondary and higher secondary schools, secondary teachers and secondary students in Punjab. Overall total of 288 schools, then 20 students and 10 teachers from each school were randomly selected as the sample of the study. The study used the value added approach. School profile proforma, a questionnaire for teachers and result sheet were the instruments of the study. Pearson correlation was used to find out the relationship (association) and step wise regression analysis with linear function was used to find out the differential impact (causal-relationship). The study identified that there was a great deficiency in the availability and the use of instructional materials in the schools. The study concluded that the less availability, mis-allocation and the deficiency in the use of instructional materials lead to wastage of resources, less effectiveness of instructional materials and lower academic performance. Based on the findings, recommendations were made for adequate provision and use of instructional materials for high academic performance. The previous study is related to this study because both of them focus on instructional facilities. However, the present

study differ from the previous study because the previous study centered on Effects of Instructional Facilities on Academic Performance of Secondary Schools in Punjab (Pakistan) while the present study is purely on functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State.

Uwaifo (2019) carried out a study on attaining standards in technology education in Nigerian universities through effective utilization of physical facilities. The study was designed to determine the level of availability of physical facilities, their utilization and what instructional approaches, given available physical facilities, would be suitable for the attainment of educational objectives in the programmes of technical education. To carryout the study, three hypotheses were formulated. An instrument containing 213 items was developed and used to obtain data from a population of 40 lecturers in three universities offering technical education programmes in Edo and Delta States of Nigeria. Frequency count, mean, percentage and National Universities Commission Standard requirements were used to answer null hypotheses 1 and 2, while analysis of variance (ANOVA) was used in testing hypotheses 3, at 0.05 level of significance. The findings revealed among other things that physical facilities are inadequately provided for instructional purposes as only 22 physical facility items (24%) out of 161 present in the list were found in adequate quantity in the universities. Physical facilities were also rarely utilized as only 77, representing 48% of the 161 physical facility items were often utilized for instructional purpose. Based on these findings, recommendations were made for universities to provide and effectively utilize physical facilities, as well as adopt the listed instructional approaches for the attainment of the domains of educational objectives. The previous study is related to this study because both of them focus on attaining standard on technology education and the utilization of instructional facilities. However, the present study differ from the previous study because the previous study

centered on Technology Education in Universities in Edo and Delta States Nigeria, the present study is purely on functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State

2.4 Summary of Review of Related Literature

The literature reviewed shows that instructional facilities are educational inputs that are vital to the teaching of any course in the school curriculum. They are essential materials that enable the teacher teach effectively in the technical workshops and classrooms. They include building, machines, work benches, equipment, tools such as saws, pliers, files, chisel, screw drivers, workbench, live and dead vehicles, center punches, scrapers etc, which instructors/teachers manipulate in order to cause learning to occur.

Literature reviewed also showed that there are inconsistency in the report of studies in relation to the availability, functionality and extent of utilization of training facilities such as hand tools, portable power tools, relevant text books and machines in the teaching and learning of automobile technology in tertiary institutions in Nigeria but few study of such has been carried out in South-West, most especially in Osun State, Nigeria.

However, other studies have revealed that the academic performance of automobile graduates has been progressively poor over the years. It is therefore observed that these graduates of automobile technology in South-South, Nigeria proved to be ill- equipped as most companies and industries spend money in training and retraining of graduates of automobile technology in South-South, Nigeria in order to meet the standard of companies and industries, instead of starting work immediately. Most research studies on facilities have not traced the root cause of this problem of poor performance of the graduates who undergo other training especially in automobile technology

before being fully engaged in jobs. This study is designed to fill this gap through the assessment of the functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

The research design used in carrying out this study was the survey research design. The survey research design was chosen as an appropriate method for the research as it seeks the view of people about a particular issue that concerns them, give room for research to study the group of people and items to source for information from the respondents. (Sambo, 2012).

3.2 Area of the Study

The study will covered three (3) technical colleges in Osun State. The technical colleges are: Osun State College of Technology, Federal Science and Technical College and Government Technical College.

3.3 Population of the Study

The targeted population for this study will be 113 respondents comprising of 89 motor vehicle mechanic teachers and 24 workshop technicians from three (3) technician colleges in Osun State.

3.5 Sampling and Sampling Techniques

Since the population is of manageable, no sampling techniques will be adopted for the study, hence the entire will be used for the study.

3.6 Instrument of Data Collection

A constructed questionnaire titled “Motor Vehicle Mechanic Trade Teaching Tools and Equipment Questionnaire (MVMTTEQ)” was used to get the desired information from the students. The questionnaire was divided into two parts (A and B). Part A will be for collection of information on personal data of respondents while Part B which consist of the sections (A - C), Section A will

address research question one which contain item, Section B will address research question two and finally Section C will address research question three.

3.7 Validation of the Instrument

The instrument will be validated by three expert from Department Industrial Technology Education, Federal University of Technology, Minna.

3.8 Reliability of the Instrument

The reliability of the research instrument will be used to determine using a split half test using the odd and even numbered items to form the two halves. The two halves will have administered to a sample of teacher and workshop technicians teaching motor vehicle mechanic trade in Niger State College Education. The Cronbach alpha test will be used to determine the reliability of the instrument.

3.9 Method of Data Collection

The researcher will collect the needed data through the administration of questionnaire to teacher and workshop technician in selected technical colleges in Osun State. The administration of the questionnaire will be carried out by the researcher and two other research assistants. A total of 113 copies of the questionnaire will be distributed to obtain responses from the students and retrieved on the spot by the researcher and research assistant.

3.10 Method of Data Analysis

Responses from the questionnaire will be analyzed using the descriptive statistics of frequency counts, percentage, mean and standard deviation and t-test. Descriptive statistics of frequency counts and percentages were used in analyzing demographic variables and mean and standard deviation will be used for the research questions. While t-test will be used for the hypotheses testing at 0.05 level of significance.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Research question one

To what extent are the tools and equipment available for teaching motor vehicle mechanic trade in technical colleges in Osun State?

Table 4.1 Extent of availability of tools and equipment for teaching motor vehicle mechanic trade in technical colleges in Osun State T – teacher WT – Workshop Technician

SN	The extent to the tools and equipment available for teaching motor vehicle mechanic trade	Teacher		Workshop Technician		Remark
		Mean	SD	Mean	SD	
General tool and equipment						
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)	3.18	0.93	3.14	1.03	Available
2	Ball pein hammer	3.42	0.67	3.37	0.73	Available
3	Hacksaws with extra blades	3.12	0.74	2.91	0.74	Available
4	300mm engineer rule socket spanners sets, with extension	3.36	0.55	3.40	0.49	Available
5	(6-32) open and flat spanners	3.64	0.53	3.61	0.49	Available
6	Ring spanners (6-32mm)	3.53	0.55	3.41	0.50	Available
7	Energy stone/block cloth	3.05	0.53	2.91	0.50	Available
8	Plug spanners	3.42	0.68	3.41	0.73	Available
9	Wirecutter	3.44	0.52	3.30	0.46	Available

10	Tyre pressure gauges	3.21	0.41	3.26	0.44	Available
	Drilling and Screw Cutting					Available
11	Electric Hand Drill	2.76	0.67	2.89	0.75	Available
12	Drill bits	3.09	0.74	3.19	0.77	Available
13	Set of stock and dies - UNC, UNF, and metric	3.24	0.72	3.37	0.64	Available
14	Taps and wrenches - UNC, UNF, and metric	3.06	0.54	3.09	0.65	Available
15	Thread file	3.58	0.58	3.56	0.50	Available
	Measuring Tools					Available
16	Vernier caliper with clock	2.99	0.28	3.00	0.00	Available
17	Hand gloves/apron	2.82	0.72	2.74	0.72	Available
	Machine Tools					Available
18	Grinding machines with assorted wheels	3.08	0.77	2.96	0.84	Available
19	A bench grinder with wheels	3.13	0.78	3.04	0.71	Available
20	Workshop surface gauges	3.31	0.52	3.39	0.49	Available
21	Valve grinding machine	3.29	0.63	3.29	0.75	Available
	Joining Metals					Available
22	Blow lamps	2.8	0.92	3.14	0.86	Available
23	Soldering iron	3.1	0.66	2.91	0.72	Available
	Lubrication Bay / Tyre and Wheel Service					Available
24	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)	2.97	0.56	3.27	0.54	Available
25	Wheel balance (rim 13-15)	3.33	0.70	3.13	0.82	Available
26	Portable tire inflator	3.33	0.49	3.39	0.71	Available

27	Weld master vulcanizer	3.13	0.40	3.09	0.58	Available
General / Service and Reconditioning						
28	Diesel engine phasing and calibration machine	3.44	0.59	3.11	0.58	Available
29	Electrical test bench	3.61	0.51	3.37	0.49	Available
Other utilities						
30	Fire extinguisher	3.19	0.66	3.36	0.74	Available
31	Sand buckets	3.46	0.52	3.33	0.47	Available
32	Water buckets	3.4	0.72	3.41	0.58	Available
33	Hoist and box	3.31	0.56	3.46	0.50	Available
34	First aid box	3.49	0.52	3.49	0.50	Available

Table 4.1 shows the teacher and workshop technician responses on the extent of availability of tools and equipment for teaching motor vehicle mechanic trade in technical colleges in Osun State. From the result, it was revealed that general tool and equipment, drilling and screw cutting equipment, Measuring tools, machine Tools, joining metals, Lubrication Bay / Tyre and Wheel Service equipment, general / service and reconditioning equipment and other utilities are highly available to a great extent with mean value ≥ 2.50 .

4.2 Research Question Two

How functions are the tools and equipment for teaching motor vehicle mechanic trade in technical colleges in Osun State?

Table 4.2 Extent functionality of the tools and equipment available for teaching motor vehicle mechanic trade in technical colleges in Osun State T – teacher WT – Workshop Technician

SN	The extent to the tools and equipment available for teaching motor vehicle mechanic trade	Teacher		Workshop Technician		Remark
		Mean	SD	Mean	SD	
General tool and equipment						
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)	2.70	0.56	2.96	1.01	Functioning
2	Ball pein hammer	2.67	0.74	3.24	0.79	Functioning
3	Hacksaws with extra blades	2.77	0.73	2.90	0.76	Functioning
4	300mm engineer rule socket spanners sets, with extension	2.76	0.84	3.27	0.64	Not Functioning
5	(6-32) open and flat spanners	2.20	1.18	2.66	1.45	Not Functioning
6	Ring spanners (6-32mm)	2.13	1.27	2.13	1.39	Functioning
7	Energy stone/block cloth	1.92	1.01	1.57	0.97	Not Functioning
8	Plug spanners	1.87	0.86	2.59	1.32	Not Functioning
9	Wirecutter	1.89	0.77	1.97	1.33	Not Functioning
10	Tyre pressure gauges	1.47	0.78	1.83	1.24	Not Functioning
Drilling and Screw Cutting						Functioning
11	Electric Hand Drill	1.82	0.50	1.86	1.08	Not Functioning
12	Drill bits	1.64	0.76	2.07	1.32	Not Functioning
13	Set of stock and dies - UNC, UNF, and metric	1.93	1.02	2.46	1.36	Not Functioning
14	Taps and wrenches - UNC, UNF, and metric	1.96	0.98	1.89	1.26	Not Functioning

15	Thread file	2.30	1.13	2.53	1.43	Not Functioning
Measuring Tools						
16	Vernier caliper with clock	1.52	0.69	1.51	0.97	Not Functioning
17	Hand gloves/apron	2.03	0.83	1.89	1.07	Not Functioning
Machine Tools						
18	Grinding machines with assorted wheels	1.97	0.99	2.26	1.26	Not Functioning
19	A bench grinder with wheels	2.39	1.09	1.99	1.19	Not Functioning
20	Workshop surface gauges	2.37	1.12	2.10	1.37	Not Functioning
21	Valve grinding machine	2.08	1.11	2.20	1.36	Not Functioning
Joining Metals						
22	Blow lamps	1.90	0.78	2.31	1.33	Functioning
23	Soldering iron	1.79	0.86	1.94	1.13	Not Functioning
Lubrication Bay / Tyre and Wheel Service						
24	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)	2.34	0.53	3.14	0.62	Functioning
25	Wheel balance (rim 13-15)	2.66	0.75	3.11	0.77	Functioning
26	Portable tire inflator	2.45	0.73	3.21	0.76	Functioning
27	Portable tire inflator	2.71	0.51	2.94	0.66	Functioning
27	Weld master vulcanizer					Functioning
General / Service and Reconditioning						
28	Diesel engine phasing and calibration machine	2.97	0.56	3.03	0.59	Functioning
29	Electrical test bench	2.75	0.86	3.36	0.59	Functioning
Other utilities						
30	Fire extinguisher	2.69	0.87	3.29	0.76	Functioning
		2.67	0.71	3.30	0.55	Functioning

31	Sand buckets	2.78	0.85	3.30	0.62	Functioning
32	Water buckets	2.75	0.75	3.30	0.65	Functioning
33	Hoist and box	2.74	0.73	3.39	0.57	Functioning
34	First aid box	2.70	0.56	2.96	1.01	Functioning

Table 4.2 shows the teacher and workshop technician responses on the extent of functionality of tools and equipment for teaching motor vehicle mechanic trade in technical colleges in Osun State. From the result, it was revealed that general tool and equipment, drilling and screw cutting equipment, Measuring tools, machine tools, joining metals are moderately functioning with mean response ≤ 2.50 . while the Lubrication Bay / Tyre and Wheel Service equipment, general / service and reconditioning equipment and other utilities are well functioning to a great extent with mean value ≥ 2.50 .

4.3 Research Question Three

To what extent are the tools and equipment utilised for teaching motor vehicle mechanic trade in technical colleges in Osun State?

Table 4.3 Extent utilisation of the tools and equipment available for teaching motor vehicle mechanic trade in technical colleges in Osun State T – teacher WT – Workshop Technician

SN	The extent to the tools and equipment available for teaching motor vehicle mechanic trade	Teacher		Workshop Technician		Remark
		Mean	SD	Mean	SD	
General tool and equipment						
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)	2.78	0.92	2.74	7.02	Utilised
2	Ball pein hammer	2.42	0.97	2.27	0.72	Not Utilised
3	Hacksaws with extra blades	2.72	0.74	2.97	0.74	Utilised
4	300mm engineer rule socket spanners sets, with extension	2.29	0.55	2.40	0.49	Utilised
5	(6-32) open and flat spanners	2.94	0.52	2.97	0.49	Utilised
6	Ring spanners (6-32mm)	2.52	0.55	2.47	0.50	Not Utilised
7	Energy stone/block cloth	2.05	0.52	2.97	0.50	Utilised
8	Plug spanners	2.42	0.98	2.47	0.72	Not Utilised
9	Wirecutter	2.44	0.52	2.20	0.49	Not Utilised
10	Tyre pressure gauges	2.27	0.47	2.29	0.44	Not Utilised
Drilling and Screw Cutting						
11	Electric Hand Drill	2.79	0.97	2.89	0.75	Utilised
12	Drill bits	2.09	0.74	2.79	0.77	Utilised
13	Set of stock and dies - UNC, UNF, and metric	2.24	0.72	2.27	0.94	Not Utilised
14	Taps and wrenches - UNC, UNF, and metric	2.09	0.54	2.09	0.95	Not Utilised
15	Thread file	2.58	0.58	2.59	0.50	Utilised
Measuring Tools						

16	Vernier caliper with clock	2.99	0.28	2.00	0.00	Utilised
17	Hand gloves/apron	2.82	0.72	2.74	0.72	Utilised
Machine Tools						
18	Grinding machines with assorted wheels	2.08	0.77	2.99	0.84	Utilised
19	A bench grinder with wheels	2.72	0.78	2.04	0.77	Utilised
20	Workshop surface gauges	2.27	0.52	2.29	0.49	Utilised
21	Valve grinding machine	2.29	0.92	2.29	0.75	Utilised
Joining Metals						
22	Blow lamps	2.80	0.92	2.74	0.89	Utilised
23	Soldering iron	2.70	0.99	2.97	0.72	Utilised
Lubrication Bay / Tyre and Wheel Service						
24	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)	2.97	0.59	2.27	0.54	Utilised
25	Wheel balance (rim 13-15)	2.22	0.70	2.72	0.82	Not Utilised
26	Portable tire inflator	2.22	0.49	2.29	0.77	Not Utilised
27	Weld master vulcanizer	2.72	0.40	2.09	0.58	Not Utilised
General / Service and Reconditioning						
28	Diesel engine phasing and calibration machine	2.44	0.59	2.77	0.58	Not Utilised
29	Electrical test bench	2.97	0.57	2.27	0.49	Not Utilised
Other utilities						
30	Fire extinguisher	2.79	0.99	2.29	0.74	Not Utilised
31	Sand buckets	2.49	0.52	2.22	0.47	Not Utilised
32	Water buckets	2.7	0.72	2.47	0.58	Not Utilised

33	Hoist and box	2.27	0.59	2.49	0.50	Not Utilised
34	First aid box	2.89	0.52	2.49	0.50	Utilised

Table 4.3 shows the teacher and workshop technician responses on the extent of utilisation of tools and equipment for teaching motor vehicle mechanic trade in technical colleges in Osun State. From the result, it was revealed that there is moderate extent of utilization of general tool and equipment, drilling and screw cutting equipment, Measuring tools, machine Tools, joining metals, Lubrication Bay / Tyre and Wheel Service equipment, general / service and reconditioning equipment and other utilities with mean value ≥ 2.50 .

4.4 Research Hypotheses One

H₀₁: There is no significant difference in the mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State.

Table 4.4: Summary of T-test between mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State

Variables	N	\bar{x}	SD	df	p-value
Teachers	89	3.34	0.46		
Workshop Technicians				11	0.063
	24	3.61	0.77		

Table 4.4 shows the Mean score of 3.34 with standard deviation of 0.46 for teachers and Mean score of 3.61 with Standard Deviation of 0.77 at df = 11, give the p-value of 0.063. Therefore, the null hypothesis one (H₀₁) was not rejected because p-value of 0.63 is greater than 0.05 alpha

level. This indicates that, there was no mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State.

4.5 Research Hypotheses Two

HO₂: There is no significant difference in the mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are functioning for teaching motor vehicle mechanic trade in technical colleges in Osun State

Table 4.5: Summary of T-test between mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are functioning for teaching motor vehicle mechanic trade in technical colleges in Osun State

Variables	N	\bar{x}	SD	df	p-value
teachers	89	2.48	0.34		
workshop				11	0.071
technicians	24	2.40	0.19		

Table 4.5 shows the Mean score of 2.48 with standard deviation of 0.34 for teachers and Mean score of 2.41 with Standard Deviation of 0.19 at $df = 11$, give the p-value of 0.071. Therefore, the null hypothesis two (H_{O2}) was not rejected because p-value of 0.071 is greater than 0.05 alpha level. This indicates that, there was no mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are functioning for teaching motor vehicle mechanic trade in technical colleges in Osun State.

4.6 Research Hypotheses Three

HO₃: There is no significant difference in the mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State

Table 4.6: Summary of T-test between mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State

Variables	N	\bar{x}	SD	df	p-value
teachers	89	2.79	0.13		
workshop				11	0.06
technicians	24	2.80	0.24		

Table 4.6 shows the Mean score of 2.79 with standard deviation of 0.13 for teachers and Mean score of 2.80 with Standard Deviation of 0.24 at $df = 11$, give the p-value of 0.06. Therefore, the null hypothesis three (H₀₃) was not rejected because p-value of 0.06 is greater than 0.05 alpha level. This indicates that, there was no mean response of motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State.

4.7 Summary of Findings

The following are summary of finding of the study.

1. From the findings research question one, it was revealed that all the itemized tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State.

2. From the findings research question two it was revealed that all the itemized tools and equipment like drilling and screw cutting equipment are not properly functioning while the Lubrication Bay / Tyre and Wheel Service equipment, and other utilities are well functioning to a great extent for teaching motor vehicle mechanic trade in technical colleges in Osun State.
3. From the findings research question three, it was revealed that all the itemized tools and equipment are moderately utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State.
4. From the findings research hypothesis one, it was revealed that there is no significance difference in the motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State.
5. From the findings research hypothesis two, it was revealed that there is no significance difference in the motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are functioning for teaching motor vehicle mechanic trade in technical colleges in Osun State.
6. From the findings research hypothesis one, it was revealed that there is no significance difference in the motor vehicle mechanic teachers and workshop technicians as regards the extent to which tools and equipment are utilised for teaching motor vehicle mechanic trade in technical colleges in Osun State.

4.8 Discussion of Findings

This study focusses on the assessment the tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State. The finding of the study on research question one revealed that that general tool and equipment, drilling and screw cutting equipment

measuring tools, machine tools, joining metals, lubrication bay / tyre and wheel service equipment, general / service and reconditioning equipment and other utilities are not available. This is in line with the findings of Dahar and Faize (2018) who carried out a study on effect of the availability and the use of instructional material on academic performance of students in Punjab (Pakistan) and found out that there is gross deficiency in the needed facilities for effective teaching and learning. The study of Dahar and Faize (2018) identified that there was a great deficiency in the availability and the use of instructional materials in the schools. The study concluded that the less availability, mis-allocation and the deficiency in the use of instructional materials lead to wastage of resources, less effectiveness of instructional materials and lower academic performance.

The finding of the study on research question two also disclosed that that general tool and equipment, drilling and screw cutting equipment, measuring tools, machine tools, joining metals are not properly functioning while the lubrication bay / tyre and wheel service equipment, general / service and reconditioning equipment and other utilities are not functioning properly. This finding is in line with the findings of Uwaifo (2019) who carried out a study on attaining standards in technology education in Nigerian universities through effective utilization of physical facilities and found out that a lot of the instructional facilities installed in the schools are obsolete and majority of the available facilities are not functioning properly. Uwaifo (2019) stated that facilities that are not functioning properly can not be utilized to teach and learn effectively in schools.

The findings on research question three was designed to determine the utilization of instructional facilities in teaching and learning motor vehicle mechanic practical in technical colleges in Osun State. More so, the findings of the study also revealed that there is low level of utilization of general tool and equipment, drilling and screw cutting equipment, measuring tools, machine tools, joining metals, lubrication bay / tyre and wheel service equipment, general / service and

reconditioning equipment and other utilities. This agrees with the findings of Umunadi (2017) who carried out a study on teacher utilization of instructional equipment and materials in teaching basic electricity in urban and rural technical colleges and found out that the instructional facilities available are not fully utilized in teaching and learning in schools. The findings of Umunadi (2017) also revealed among other things, that there inadequate basic electricity equipment and consumable materials available in the technical colleges. In addition, teachers in technical colleges often fail to properly use the equipment, tools and materials needed in the teaching of the subject. Finally, the findings of the study revealed that both motor vehicle mechanic teachers and workshop technicians shared the same opinion as regards the extent to which tools and equipment are available, functioning and utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Study

This study is aimed at investigating the tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State. The study explores the assessment of availability of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State, functionality of the available tools and equipment in teaching and learning motor vehicle mechanic practical in technical colleges in Osun State and utilization of instructional facilities in teaching and learning motor vehicle mechanic practical in technical colleges in Osun State. The literature review was discussed based on theoretical framework, conceptual framework and empirical framework. A descriptive survey research design was adopted. The study will cover three (3) technical colleges in Osun State. The technical colleges are: Osun State College of Technology, Federal Science and Technical College and Government Technical College. The targeted population for this study will be 113 respondents comprising of 89 motor vehicle mechanic teachers and 24 workshop technicians from three (3) technician colleges in Osun State. A constructed questionnaire titled “Motor Vehicle Mechanic Trade Teaching Tools and Equipment Questionnaire (MVMTTEQ)” was used to get the desired information from the students. Responses from the questionnaire were analyzed using descriptive statistics mean and standard deviation was used for the research questions. While t-test was used for the hypotheses testing at 0.05 level of significance. The findings of the study revealed that all the itemized tools and equipment are available for teaching motor vehicle mechanic trade in technical colleges in Osun State. It was revealed that all the itemized tools and equipment like drilling and screw cutting

equipment are not properly functioning while the Lubrication Bay / Tyre and Wheel Service equipment, and other utilities are well functioning to a great extent for teaching motor vehicle mechanic trade in technical colleges in Osun State. And finally all the itemized tools and equipment are moderately utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State.

5.2 Implication of the Study

The implications of the study are:

The National Technical Board Education (NBTE) will benefit from the finding of the study, as the study is expected to state the instructional facilities that are available in the colleges as well as indicate how often they are utilized for instructional purposes. This study would help to ensure that the graduates acquire a level of training which will enable them to be self-reliant, self-sufficient and employable by self or industries.

Lecturers, instructors and technologies of automobile technology would also benefit from the findings of this study by using adequate functional facilities to equip graduates with the skills required by the labour market, that would help to match skills with the labour demanded by the companies and industries. Hence, the attitude of floating in the labour market by graduates of automobile technology would be reduced.

Managers of the industries would also benefit from the findings of the study, since the improvement of automobile graduates would increase production, effectiveness and efficiency in the industries. The result of the study would help to increase the confidence of industries in the graduates and colleges.

And finally the graduates of the automobile technology would also benefit from the findings of this study, as the automobile graduates would be trained/equipped with functional facilities that would provide them with skills that can enable them to be gainfully employed in industries and civil service or through self-employment.

5.3 Contribution to Knowledge

This study was able to established the level of availability, functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State. It was revealed that there are great extent of availability, moderate functionality and low utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State.

5.4 Conclusion

Based on finding of the study on the asses on assessment the tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State, which further explores the availability, functionality and utilization of tools and equipment for teaching motor vehicle mechanic practical in technical colleges in Osun State. It could be concluded that general tool and equipment, drilling and screw cutting equipment, Measuring tools, machine Tools, joining metals, Lubrication Bay / Tyre and Wheel Service equipment, general / service and reconditioning equipment and other utilities are highly available to a great extent, although the general tool and equipment, drilling and screw cutting equipment, Measuring tools, machine tools, joining metals are not properly functioning while the Lubrication Bay / Tyre and Wheel Service equipment, general / service and reconditioning equipment and other utilities are well functioning to a great extent.

It could also be concluded that there is moderate extent of utilization of general tool and equipment, drilling and screw cutting equipment, Measuring tools, machine Tools, joining metals, Lubrication Bay / Tyre and Wheel Service equipment, general / service and reconditioning equipment and other utilities. And both motor vehicle mechanic teachers and workshop technicians shared the same opinion as regards the extent to which tools and equipment are available, functioning and utilized for teaching motor vehicle mechanic trade in technical colleges in Osun State.

5.5 Recommendations

Based on the conclusion of the study following recommendation were made:

- i. Government should provide qualified teachers, classrooms, workshop, equipment and necessary facilities in technical Colleges for teaching motor vehicle mechanic trade.
- ii. Adequate provision and functioning use of equipment and tool materials for high academic performance.
- iii. Technical Colleges teacher and workshop technician should be encourage to always utilised the equipment and necessary tools for teaching motor vehicle mechanic trade

5.6 Suggestion for Further Studies

The following are suggested for further studies

1. Assessment impact of equipment and tools for teaching motor vehicle mechanic trade in technical Colleges in Osun State.
2. Factors Affecting the level of availability, functionality and utilization of equipment and tools for teaching motor vehicle mechanic trade in technical Colleges in Osun State.

3. Assessment of the availability and utilization of modern automobile workshop tools and equipment in teaching Motor Vehicle Mechanics trade in Technical colleges in Osun state.

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Department of Industrial and Technology Education
Federal University Technology, Minna,
Niger State.

Dear Respondent,

I am an undergraduate student of Industrial and Technology Education in the above named University. I am presently conducting research on Assessment of functionality and utilisation of motor vehicle mechanic trade teaching tools and equipment in Technical Colleges in Osun State. The Questionnaire is designed as part of the study to collect relevant information for a successful completion of this research.

Please kindly provide response to these questions; assuring you that it will purely be used for academic purposes alone.

Thank you for your anticipated cooperation.

Yours sincerely,

Oladimeji, Blessing Ayodeji

2016/3/62475TI

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

M.B 65, MINNA NIGER STATE

NIGERIA

SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION

DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION

**MOTOR VEHICLE MECHANIC TRADE TEACHING TOOLS AND EQUIPMENT
QUESTIONNAIRE (MVMTEQ).**

INSTRUCTION:

Below are respondents' personal information. Please tick (✓) the appropriate information in the spaces provided.

SECTION A

RESPONDENT'S PERSONAL DATA

1. Sex

Male () Female ()

2. Age

23 – 32 () 33 - 42 () 43 and above ()

3. Education Qualification

OND () BTECH/BSC/ HND () PhD () Others ()

4. Cadre

Teacher () Workshop Technician ()

SECTION B

INSTRUCTION:

Below are some questions to assess the functionality and utilisation of motor vehicle mechanic trade teaching tools and equipment in Technical Colleges in Osun State. Please tick (✓) the appropriate column to indicate the extent to which these skills are required.

SA = Strongly Agree

SD = Strongly Disagree

A = Agree

D = Disagree

Question One: What extent are the tools and equipment available for teaching motor vehicle mechanic trade in technical colleges in Osun State?

Note: HA: Highly Available

MA: Moderately Available

FA: Fairly Available

NA: Not Available

SN	The extent to the tools and equipment available for teaching motor vehicle mechanic trade	HA	MA	FA	NA
	General tool and equipment				
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)				
2	Ball pein hammer				
3	Hacksaws with extra blades				
4	300mm engineer rule socket spanners sets, with extension				

5	(6-32) open and flat spanners				
6	Ring spanners (6-32mm)				
7	Energy stone/block cloth				
8	Plug spanners				
9	Wirecutter				
10	Tyre pressure gauges				
	Drilling and Screw Cutting				
11	Electric Hand Drill				
12	Drill bits				
13	Set of stock and dies - UNC, UNF, and metric				
14	Taps and wrenches - UNC, UNF, and metric				
15	Thread file				
	Measuring Tools				
16	Vernier caliper with clock				
17	Hand gloves/apron				
	Machine Tools				
18	Grinding machines with assorted wheels				
19	A bench grinder with wheels				
20	Workshop surface gauges				
21	Valve grinding machine				
	Joining Metals				
22	Blow lamps				
23	Soldering iron				
	Lubrication Bay / Tyre and Wheel Service				

24	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)				
25	Wheel balance (rim 13-15)				
26	Portable tire inflator				
27	Weld master vulcanizer				
	General / Service and Reconditioning				
28	Diesel engine phasing and calibration machine				
29	Electrical test bench				
	Other utilities				
30	Fire extinguisher				
31	Sand buckets				
32	Water buckets				
33	Hoist and box				
34	First aid box				

Question Two:

How functions are the tools and equipment for teaching motor vehicle mechanic trade in technical colleges in Osun State?

Note: HA: Great Extent
MA: Moderate Extent
FA: Low Extent
NA: Lowest Extent

	The extent to the tools and equipment functioning for teaching motor vehicle mechanic trade	GE	ME	LE	LWE
	General tool and equipment				
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)				
2	Ball pein hammer				
3	Hacksaws with extra blades				
4	300mm engineer rule socket spanners sets, with extension				
5	(6-32) open and flat spanners				
6	Ring spanners (6-32mm)				

7	Energy stone/block cloth				
8	Plug spanners				
9	Magnet spanners				
10	Allen keys				
11	Feeler gauges				
12	Oil cans				
13	Grease guns				
14	Spark plug files				
15	Combination pliers				
16	Longnose pliers				
17	Wirecutter				
18	Tyre pressure gauges				
	Drilling and Screw Cutting				
19	Electric Hand Drill				
20	Drill bits				
21	Set of stock and dies - UNC, UNF, and metric				
22	Taps and wrenches - UNC, UNF, and metric				
23	Thread file				
24	Roller type thread restorer				
25	Screw (stud) extractor set				
	Measuring Tools				
26	Vernier caliper with clock				
27	Hand gloves/apron				
28	Surface plates				

29	Vee blocks				
30	Micrometer 0.25mm, 25-50mm, 50-75mm internal and external				
31	Dial gauge indicator with magnetic stand				
	Machine Tools				
32	Grinding machines with assorted wheels				
33	A bench grinder with wheels				
34	Workshop surface gauges				
35	Valve grinding machine				
	Joining Metals				
36	Blow lamps				
37	Soldering iron				
	Lubrication Bay / Tyre and Wheel Service				
38	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)				
39	Wheel balance (rim 13-15)				
40	Portable tire inflator				
41	Weld master vulcanizer				
42	Airline gauge				
43	Steam cleaner (complete) oil-fired or electric				
44	High-pressure washer				
45	Tire changer complete with bead breaker				
46	Various sizes of wheel braces				
47	Portable engine hoist				
	General / Service and Reconditioning				
48	Diesel engine phasing and calibration machine				
49	Electrical test bench				

50	Cylinder boring machine with accessories and assorted tools				
51	Honing machine with accessories and assorted cutters				
52	Bottle jack (hydraulic) light and heavy				
53	Vehicle tire				
54	Trolley jacks				
55	Motor scope (engine analyzer)				
56	Auto Electrical system instructional chassis				
57	Armature growler				
58	Hydraulic nipple forming tool				
59	Timing light				
60	Inspection pits				
61	Torque wrench dial type				
62	Carburetor service kit				
63	Piston ring compressor				
64	Axle stands				
65	Diagnostic testing machine (exhaust gas analyzer)				
	Other utilities				
66	Fire extinguisher				
67	Sand buckets				
68	Water buckets				
69	Hoist and box				
70	First aid box				

Question Three: To what extent are the tools and equipment utilised for teaching motor vehicle mechanic trade in technical colleges in Osun State?

Note: HA: Great Extent
MA: Moderate Extent
FA: Low Extent
NA: Lowest Extent

SN	The extent to the tools and equipment functioning for teaching motor vehicle mechanic trade	GE	ME	LE	LWE
	General tool and equipment				
1	Toolboxes (comprising a set of flat, ring, half-round, and triangular files)				
2	Ball pein hammer				
3	Hacksaws with extra blades				
4	300mm engineer rule socket spanners sets, with extension				

5	(6-32) open and flat spanners				
6	Ring spanners (6-32mm)				
7	Energy stone/block cloth				
8	Plug spanners				
9	Magnet spanners				
10	Allen keys				
11	Feeler gauges				
12	Oil cans				
13	Grease guns				
14	Spark plug files				
15	Combination pliers				
16	Longnose pliers				
17	Wirecutter				
18	Tyre pressure gauges				
	Drilling and Screw Cutting				
19	Electric Hand Drill				
20	Drill bits				
21	Set of stock and dies - UNC, UNF, and metric				
22	Taps and wrenches - UNC, UNF, and metric				
23	Thread file				
24	Roller type thread restorer				
25	Screw (stud) extractor set				
	Measuring Tools				
26	Vernier caliper with clock				

27	Hand gloves/apron				
28	Surface plates				
29	Vee blocks				
30	Micrometer 0.25mm, 25-50mm, 50-75mm internal and external				
31	Dial gauge indicator with magnetic stand				
	Machine Tools				
32	Grinding machines with assorted wheels				
33	A bench grinder with wheels				
34	Workshop surface gauges				
35	Valve grinding machine				
	Joining Metals				
36	Blow lamps				
37	Soldering iron				
	Lubrication Bay / Tyre and Wheel Service				
38	Compressor (3phase motor-driven type complete with a spray gun, grease, hose)				
39	Wheel balance (rim 13-15)				
40	Portable tire inflator				
41	Weld master vulcanizer				
42	Airline gauge				
43	Steam cleaner (complete) oil-fired or electric				
44	High-pressure washer				
45	Tire changer complete with bead breaker				
46	Various sizes of wheel braces				
47	Portable engine hoist				

	General / Service and Reconditioning				
48	Diesel engine phasing and calibration machine				
49	Electrical test bench				
50	Cylinder boring machine with accessories and assorted tools				
51	Honing machine with accessories and assorted cutters				
52	Bottle jack (hydraulic) light and heavy				
53	Vehicle tire				
54	Trolley jacks				
55	Motor scope (engine analyzer)				
56	Auto Electrical system instructional chassis				
57	Armature growler				
58	Hydraulic nipple forming tool				
59	Timing light				
60	Inspection pits				
61	Torque wrench dial type				
62	Carburetor service kit				
63	Piston ring compressor				
64	Axle stands				
65	Diagnostic testing machine (exhaust gas analyzer)				
	Other utilities				
66	Fire extinguisher				
67	Sand buckets				
68	Water buckets				
69	Hoist and box				
70	First aid box				