



Sudan University of Science and Technology

College of Graduate Studies

College of Education

**strategies for improving students performance in metalwork Trade in
Technical colleges and Schools of the Katsina state, Nigeria,**

**A thesis Submitted in Fulfilment of the Requirement for the Award of
Master Degree Technical Education.**

Prepared by:

Bello Aminu

Supervised by:

Dr. Abdelrahman Ahmed Abdalla

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Bismillah



From the Qur'an

قَالَ تَعَالَى:

﴿وَعَلَّمْنَاهُ صَنْعَةَ لَبُوسٍ لَّكُمْ لِيُحَصِّنَاكُمْ مِّنْ بِأْسِكُمْ فَهَلْ أَنْتُمْ شَاكِرُونَ﴾

﴿الأنبياء: ٨٠﴾

And We taught him the making of shields for you, to protect you from your violence. Are you, then, appreciative?

Chapter 21: verse:80

DEDICATION

This research is dedicated to my beloved parents. Late Malam Aminu Tela Safana, and my mother Malama Aminatu for their moral and financial support throughout my studies.

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ABSTRACT

The study of strategies for improving students performance in metalwork Trade in Technical colleges and Schools of the Katsina state, Nigeria, carried out as a result of poor performance of students in the colleges\schools. This study therefore aimed at identifying the way for improving student's performance for technical colleges and schools. To carry out the study, a five (5) point likert scale was adopted. The instruments made up of 52 structured questionnaire items validated by three experts and were there after used in collecting data for the study. Five research questions were used to collect data from 135 metalwork trades teachers (MW.T.T) in the colleges and school of Katsina State Nigeria. Mean statistics were used to analyze the data research questions. The findings of the study among others revealed that the respondents needs: to obtain additional professional qualification, computer numerical control machines, functional machines, functional stand-by generator, frequent supply of electricity, project method, questioning techniques, role play, independent study, learning mode, programmed instructional method, cognitive apprentice instructional strategy, educating parents the importance of technical education, scholarship to both teachers and students, office, office facilities, accommodation and vehicle loan to the teachers. The major Recommendation are: there should be a special allowances (hazards) to metalwork trades teachers (MWTT) individuals\Non Governmental Organizations should be involved in the provision of needed materials for teaching and learning, teachers should also advance their knowledge to the modern world of technology. And the government should therefore increase the funding system in technical education to meet the global change.

المستخلص

استراتيجيات دراسة لتحسين أداء الطلاب في الأعمال المعدنية التجارية في الكليات التقنية والمدارس بولاية كاتسينا ، نيجيريا. نفذت نتيجة لضعف أداء الطلاب في الكليات / المدارس، هدفت هذه الدراسة إلى تحديد طريقة تحسين أداء الطلاب في الكليات والمدارس التقنية . لتنفيذ الدراسة ، تم اعتماد مقياس (5) نقاط تشابه. تتكون الأداة من 52 عنصر استبيان هيكلية تم التحقق من صحتها من قبل ثلاثة خبراء وكانت هناك بعد استخدامها في جمع البيانات للدراسة . تم استخدام خمسة أسئلة بحثية لجمع البيانات من 135 معلماً في مجال أشغال المعادن (M.W.T.T) في كليات ومدارس في ولاية كاتسينا، نيجيريا. واستخدمت الإحصائيات يعني لتحليل أسئلة البحث البيانات . كشفت نتائج الدراسة من بين أمور أخرى أن المشاركين بحاجة إلى: للحصول على مؤهل مهني إضافي ، آلات التحكم العددي بالكمبيوتر ، الآلات الوظيفية ، مولد احتياطي وظيفي ، التزويد المتكرر للكهرباء ، طريقة المشروع ، تقنيات الاستجواب ، لعب الأدوار ، الدراسة المستقلة ، وضع التعلم ، الطريقة التعليمية المبرمجة ، استراتيجية تعليم المتدرب المعرفي ، التثقيف أولياء الأمور أهمية التعليم التقني والمنح الدراسية لكل من المعلمين والطلاب والمكاتب والمرافق المكتبية والإسكان وقروض المركبات للمعلمين. التوصية الرئيسية هي : يجب أن يكون هناك بدل خاص (مخاطر) لأفراد معلمي المهن المعدنية (MWTT) يجب إشراك الأفراد / المنظمات غير الحكومية في توفير المواد اللازمة للتدريس والتعلم ، كما يجب على المعلمين أيضاً تطوير معرفتهم إلى عالم التكنولوجيا الحديث . وبالتالي يجب على الحكومة زيادة نظام التمويل في التعليم الفني لمواجهة التغيير العالمي.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

1.2 Background of the Study

The Senior Secondary Certificate Examination [S.S.C.E] and that of National Technical Certificate [NTC] is a final year examination organized by West African Examination Council (WAEC), National Examination Council (NECO) and National Business and Technical Examination Board (NABTEB) for the last stage of Technical and Senior Secondary Education in Nigeria.

The West African Examination Council is an examination board that conducts the West African Senior Certificate Examination, a University, Colleges and Polytechnics Entry Examination in Nigeria and other West African countries. Established in 1952, the council has contributed to education in Anglophonic countries of West Africa (Ghana, Nigeria, Sierraleone, Liberia and Gambia) with number of examinations they have coordinated.

The National Examination Council (NECO) was created in 1999, with the aim to conduct the Senior Secondary Certificate Examination for Nigerian students; it is a federal Government parastatal.

The National Business and Technical Examination Board (NABTEB) were established in 1992 to domesticate craft level examination for final year students in Technical and Commercial Colleges with a series of examinations. (National policy of education NPE 2004) the purpose which is not determines the recipient level of proficiency, in the subject as well as their ability to utilize this knowledge and skill effectively.

The Nigerian national policy on education (NPE) [2008] define the Technical and Vocational Education as a comprehensive term referring to those aspect of their education process involves, in addition to general education, studying of technical skills, attitudes, understanding and knowledge relating to occupations in the various sector of economic and social life while Technical Education was defined by the NPE (2000) as that aspect of education which leads to the acquisition of the practical and applied skills as well as basic knowledge.

By the two good definitions therefore, Vocational and Technical Education seek to empower individuals to be self-reliance in respect with the goal of the NPE (2004) which are presented as the following;-

- 1 Provide training manpower in the applied science, technology and business particularly at craft, advance craft and technical level.
- 2 Provide technical knowledge and vocational skills necessary for agricultural, commerce and economic development.

3 Give training and impart the necessary skill to individuals who shall be self-reliant economically.

Metalwork is an integral part of Technical and Vocational Education (TVE) as entails the process of manipulating metal for the usefulness of mankind. Aladetan (2012) asserted that no one certainly knows where and when metal working began, but archeologist assumes that metalworking preceded the emergence of the first civilization. The metal workers depend on extraction and manipulation of metal works for producing of precision component for industries and technical application that range from construction, transportation. The important of the metalwork cannot be over emphasized, because without metal, goods and services would cease to move around the globe on the scale we know today.

Many individuals have been trained and still receiving training on the metalwork to become Craftsmen, Technicians, Technologists and Engineers in modern world of today. However, skill of metal work trades at the technical college and secondary school level are intended to produce competent craftsmen with sound theoretical and practical skills.

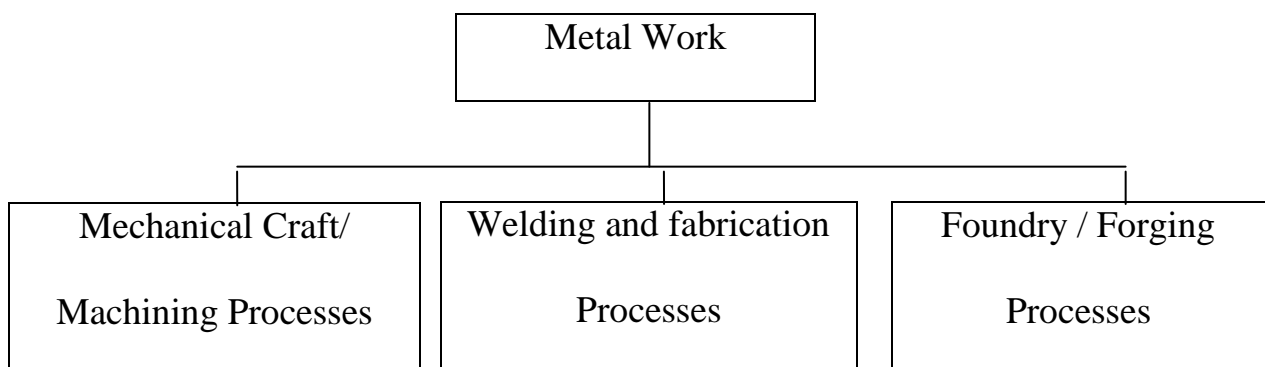
The introduction of metalworking as part of technical education system is not particular to Nigerian alone. It is accepted throughout the world. The Provision of metal works is quite comprehensive. Its components are organized by the three entities as trades or skills. Idjawe (2014) asserted that

hence such skill can be subdivided as mechanical craft / machining processes, welding/fabrication process and foundry/forging processes. With a sound practical knowledge and skills in those level of education should have acquired some basic competencies that would make them more functional, more productive and most importantly to appreciate the fact there dignity in labour and in working with their hand contrary to the misconception held that technological and vocational education is not meant for bright men hand. Teaching and learning of metal work trades requires adequate facilities materials and well trained teachers who can train the students effectively. Lack of those may lead to student graduating from technical college/school without the required practical knowledge and skills.

Hence such skills can be subdivided as shown in figure No 1:

Figure No. 1- (source: Idjawe 2014)

Skills in metalwork



Based on the above context, this study was designed to find out the strategies for improving the performance of the student in metal work in Katsina state.

1.3 Statement of the Problem.

The goal of the Technical and Vocational Education as stipulated in the national policy on education (2004) are geared toward in the national policy trained manpower in applied science, technology and business particularly at craft, advanced craft and technology levels and to give training and in part the necessary skills to individuals who shall be self reliant economically. These can only be achieved through providing;-

1. Professional and qualified teachers to teach the subject.
2. Well organized and equipped standard workshops.
3. Proper guidance and counseling.
4. Communal support.

Erickson (1980) Olunlaya (2002) and Amao (2009) agreed that qualified metalwork teacher's, availability of classrooms, workshops and instructional materials should be sufficient for the curriculum. Lack of the above provisions affects students' performance in metalwork which is the integral part of

Technical Education. Based on the above context, this was designed to find out strategies for improving students' performance.

1.4 Purpose of the Study

The purpose of this study is to find out the strategies for improving students' performance in the metalwork trade in the Technical Colleges and Schools in Katsina state. Specifically, the study will seek to;

1. Ascertain the qualification of the teachers teaching metal work trades in the Technical Colleges and Schools of Katsina state.
2. Ascertain the availability of the instructional material in the school and Technical Colleges for teaching metalwork trades in Katsina state.
3. Determine the teaching strategies employed by the technical teachers for teaching metal work in Technical Colleges and Schools in Katsina state
4. Identify the strategies for improving the performance of the students in the metalwork trades in Katsina state.
5. Identify the teachers and students empowerment in Katsina state.

1.5 Significance of the Study.

This research would serve to call the attention of the government in providing the adequate and latest instructional materials. It will also help the school

managers, Ministry of Education and Technical Education Board to ensure that only qualified teachers are assigned to teach the metalwork trades in the Technical Colleges and Schools. It also helps the community members to contribute and provide adequate facility for teaching subjects.

1.6 Research Questions.

The following research questions were formulated to find out the solution to the research problem;-

1. What are the qualifications of teachers teaching metalwork trade in the Technical College and Schools?
2. To what extent the instructional materials in the Technical Colleges/ School and other facilities for teaching the metalwork trades are available?
3. What are the teaching strategies employed by the technical teachers for teaching metal work in Technical Colleges and Schools?
4. What are the ways of improving students' performance in the metal work trades?
5. To what extent teachers and learners of the metal work trades being empowered?

1.7 Limitation of the Study.

The research covered all the technical colleges and schools in all the educational zones within Katsina State, Nigeria.

Namely were;

- 1- Katsina zonal Inspectorate of Education
- 2- Daura Zonal Education Quality Assurance.
- 3- Mani Zonal Education Quality Assurance
- 4- Dutsin-ma Zonal Education Quality Assurance.
- 5- Kankia Zonal Education Quality Assurance.
- 6- Malumfashi Zonal Education Quality Assurance.
- 7- Funtua Zonal Education Quality Assurance.

1.8 Terminology of the Study.

Strategies: planned ways – processes – methods

Student: person or persons studying in school, college or university

Performance: (work effectiveness) the manner in which somebody functions, operates well

Metalwork: is the process of manipulating metals for the usefulness of mankind

Trades: skilled occupations, specific area of business or industry

Technical colleges and schools: is that stage of education where children receive knowledge after graduation from junior secondary school

Katsina state: is one of the thirty six states of Nigeria

CHAPTER TWO

REVIEW OF RELATED LITERATURE AND PREVIOUS STUDIES

This chapter present discussion, research results and authoritative opinion on theories and issues pertaining to the concepts of improving performance of Students in metal work trades. It is reviewed under the following sub –headings:

- 1- Theoretical aspect of the research.
- 2- Previous study
- 3- The role and qualities of teachers in Nigeria's Nation development.
- 4- The importance of Technical Education in national development.
- 5- Teaching methods.
- 6- The roles of instructional materials in teaching and learning of metal work trades.
- 7- Factors influencing teachers' attitude toward teaching and learning activities.
- 8- The need of empowering students and teachers in technical education.
- 9- Proper funding of technical education.
- 10- Summary of literature review.

2.1 Theoretical Aspects of the Research.

- 1- Brief historical development of Vocational and Technical Education in Nigeria.
- 2- Technical College /Secondary Schools Education level.
- 3- Metal Work Trade.
- 4- Brief history of Katsina State.
- 5- Brief history of Nigeria

2.2 Previous Studies

Related empirical studies with respect to the impact of strategies of improving student performance are presented.

Sule (2001) carried out a study on student performance on metalwork trades as a strategy for boosting nation economy. The study adopted the survey method. The population consisted of 379 students receiving training on various metalwork trades. Data collected were analyzed using the mean. The result of data analysis revealed that a change in performance is based on teachers' capacity and adequacy of machines and other related tools.

It is asserted by Willison (2001) that in the United States these concerns have led to the new idea particularly for generic skills such as problem solving, team work and communication. Ellis (2001) identified three benefits of using

instructional materials. First, instructional material make content easier to understand and learn. Second instructional materials also help students separate information from what might be interesting but not essential. Thirdly, instructional material develops the necessary semantic information processing skills required to learn the material. By making the organization of content information easier to understand instructional material allow material to be addressed at more sophisticated levels. Finally students who use instructional material may become more strategic learners. An individual approach to task is called strategy (Bulgren and Lenz), in Ellis (2001) strategies include how a person thinks and acts when planning, executing evaluating a task and its subsequent outcome.

Buchanan and Boddy (2004) carried out a study on new trend in metalwork. The population comparisons some selected states in America totaling 1230 metalwork technology teachers with no sample taken. Frequency counts, mean, percentages, rank order were used to answer the research questions while to last chi-square and Anova) were used to test hypothesis at 0.05 level of probability. The result revealed that overall pattern of knowledge and skill required by technology a metalwork trades teachers has changed or altered due to advance technology of modern day metalwork machines. The study of Offiong, Akpan and Usoro (2013) funding vocational and technical education in Nigeria in term of global economic recession. An article publishes

in international journal of arts and humanities, Bahir Dar, Ethiopia. The researcher aimed at determining the educational funding pattern in Nigeria, particularly assess the method of funding vocational and technical education in Nigeria, as well as the needs for and ways of adequate funding of the vocational and technical education in Nigeria in time of economic recession.

Based on the findings the researchers conclude that vocational and technical education as a workshop-based and skills development oriented program is capital intensive as it places a heavy demand on equipment, tools, personals and special workshops to accommodate the emerging technologies associated with vocational training. The singular effort of government in funding vocational and technical education has so far not paid off considering the serious dearth of equipment tools, men power and structures which could have helped to salvage Nigeria from her present technological backwardness. The fact remains that since government alone cannot adequately fund vocational and technical education supplementary funding has to be sources from else were if the system must survive and saleable entrepreneurial skills imported to the Nigeria youth. This will no doubt stem the rising tide of youth restiveness, kidnapping armed robbery, political thuggery and other vices that remain in bone of the nation.

Bamidele and Onwonoye (2014) carried out a research skills requirement by the technical and vocational apprenticeship trainee for national integration and

transformation a well structured questionnaire items was divided into parts and sections were used to collect data from the respondents. Mean statistics was used to answer the 2 research questions posed for the study. Standard deviation of each item from the mean was also determined to find out how common the opinion respondents were: while t-test at 0.05 level of significance was used to test the hypothesis. Findings the study reveals that: ability to identify working materials needed for a specific project in their various trades is needed, dismantling and assembling of relevant components skillfully is required; ability to repair identified faults is also required; ability to estimate the cost of a specific repair is needed at very high level; identification of relevant tools that are needed to carry out a specific job and also fund that the skills acquired are beneficial to the individual and the society.

Idjawe and Imarhiagbe (2014) conducted a research an investigation to ascertain the factors affecting the functionality of metal work machines in technical colleges for quality delivery of program. This study was carried out to ascertain the factors affecting the functionality of metalwork machines in technical colleges in Edo and Delta states.

A survey research design was adopted for the study. The population for the study was 72 technical instructors and workshops technicians drawn from six technical colleges. A 20 items questionnaire was developed to elicit information from the responded. Mean statistics was the statistical tool used to

analyze the research questions. The study revealed that lack of electricity power supply and faulty condition affect the functionality of metalwork machines during practical. Six recommendations were made to address this gap created in technical colleges competencies.

2.3 Brief historical development of Vocational and Technical Education in Nigeria.

During the nineteenth century, movements from southern to northern Nigeria were severally limited. The United Africa Company limited and John Holt limited were the only two companies which provide cargo services to the North through the River Niger. The bulk of the passengers and cargo handled by these companies were for their trading groups and agents. In addition to transporting passengers and cargo, the marine services provide regular employment for many Nigerians, between 1925 and 1935 over twenty thousand Nigerians were employed as regular staff. Among the people employed were a few clerks' mechanics and craftsmen. Over ten thousand others were employed as casual laborers on daily part rates. Because the Dockyards provided a limited amount of technical training ground, the government realised for the first time that formal technical education was necessary to enable more Nigerians to take up skilled jobs.

Technical and vocational education in Nigeria had a slow start and developed less quickly than other forms of education. This was practically due to the fact that the voluntary agencies (missionary) which pioneered western education in Nigeria were unable to increase or popularize technical and vocational education on the same scale as literary education. Since the former is much more expensive in term of staff and equipment. Moreover, the situation further complicated by the fact that most of those British colonial policy-makers were literary man and women who had no knowledge of technical and vocational education (Fafunwa, 1974) in Kusada (2013). Despite the indigenous apprenticeship system of vocational training, missionary schools which flourished them introduced farming, bricklaying and carpentry as part of the curriculum, but those skills were not seriously regarded by both the pupils and the parents, the program did not sustain for too long except the Blaize Memorial Industrial School in Abeokuta, founded by same Nigerians and West Indian, and then the Hope Waddel Training Institute in Calabar established by the church missionary society in 1985. Henry (2003) in Kusada (2013; 38).

In 1925 a class of apprentice masters was established on a part-time basis for a few selected Nigerians who were already in regular employed with the marine department. In 1929 a technical instructor was employed from Britain and a technical training scheme began on a permanent basis. However, it was not

untill 1946 that the conscious planning of a formal system of technical education started.

The conscious planning of a system of technical education in Nigeria dated from 1946 when it was given a major place in the ten-year plan for development and welfare. Before this date, the colonial governments' attitude was that the provision of technical education for Nigerians (beyond very limited artisan training for governmental departments) was neither necessary nor feasible even as late as 1942; educational officials were unable to recommend the establishment of single training institution. It is doubtful whether a big trade school or a technical college necessary at the present stage. Such a school would be extremely expensive to build and equip required a large European and African staff and there would be no great demand for its products when trained.

Technical and vocational education began an organized sector the educational system only in the late 40s. With the implementation of the program outline in the ten- year's development plan. The program was financed mainly from the funds made available by the United Kingdom government under the colonial development and welfare scheme. Four types of institutions were created: technical institution, trades centers, handcrafts and domestic science centers. During 1950s, there was much debate as to what exact from the content of Nigerian Technical and Vocational Education ought to be skill levels to be aims at courses curriculum and examination standard. There were

recommendations by Ashby Commission for Federal Governments of Nigeria to:-

1. Provide a viable base upon which education could be built.
2. Provide means for making the individual education more relevant to the contemporary Nigerian environment and its problem.

The Ashby commission (1959) on which the subsequent development of technical and vocational education in 1960s to date was based single out the emphasis placed on literary education at secondary and post secondary levels in the Nigerian education system. After Nigerian independence, technical and vocational education follows closely in the pattern development by the British government (Osuala 1981).

The education system remained largely literary in nature with vocational and technical aspect not made popular. Dike, (2009) and Kenedy (2012) in Kusada (2016) stated that, despite the various attempt at the regional levels to initiate some new ideas and reforms by Nigerian political leaders, the structure and aims remained largely literary and static.

2.4 Organization of Vocational Technical Education in Nigeria:

Vocational – Technical Education began as an organized sector of the educational system only in the late forties (40s) with the implementation of the program outlined in the ten-year development plan. The program was financed

mainly from funds made available by the United Kingdom Government under the colonial development and welfare scheme. Four main types of institutions were created; technical institutes, trade centers, handicraft and domestic science centers. They were completely under government control. The technical institute at Yaba was the most fully developed of its type. The institute offered three full-time programs and special short courses. The full-time programs were designed as junior technical, senior technical and teacher training. The junior technical course was a program of secondary education "with a technical bias". In four years of resident instruction it offered woodwork, drafting, sub-professional engineering, commerce and printing. These courses were designed for students who had completed eight years of primary education and had passed a special entrance examination. The senior technical course was a three years course, with two years of residential instruction separated by a year of on-the-job training in industry. This course admitted students who had completed a standard secondary or grammar school course. The senior technical programmers' offered course in electrical, mechanical and civil engineering a course for architectural assistants and a course in economics. The teacher training programs was a two year course for the preparation of teachers for handicraft centre's and secondary school craft courses. One of the part-time programs of the Yaba Technical Institute was designed as day release. It consisted of continuation courses offered in co-operation with industrial concern. This program permitted an employee time away from the job, usually

two days per week, to undertake training of direct value of his work. The program also offered courses for engineers, printers, mechanics and carpenters. Evening continuation courses trained adults who had successful experience in the job. These courses were much longer and include two years of preliminary training for those deficient in English, History or Mathematics. Advance student were training as engineering and architectural assistants. The Yaba Technical Institute has combined total enrolment of six hundred students in 1947, one half of whom was enrolled as full-time students in residence. It maintained a close relationship with industry and co-operated in the development of programs to meet industry's special training needs.

2.5 Technical College / Secondary School Education Level:

Secondary education is the education children receive after graduation from primary level and before the stage. The broad goal of secondary education is to prepare the individual for useful living within the society and higher education in a specific term as in NPE (2014)

- a) Provide all primary school leavers with opportunity for education of higher level, irrespective of sex, social status, religious or ethnic background;
- b) Offer diversified curriculum to cater for the different talents opportunities and future roles;

- c) Provide trained manpower in the applied science, technology and commerce at sub-professional grade;
- d) Develop and promote Nigerian languages arts and culture in the context of world's culture heritage;
- e) Inspire student with a desire for self improvement and achievement of excellence;
- f) Foster National unity with an emphasis on the common ties and unite us in our diversity;
- g) Raise a generation of people who can think for themselves, respect the views and feeling of others, respect the dignity for labour, appreciate those values specified under our broad national goals and live as good citizens;
- h) Provide technical knowledge for agriculture, industrial, commercial and economical development.

To achieve the stated goals, Secondary School/ Technical Colleges Education shall be of six years duration, given in stages; junior school stage and senior school stage, each shall be of three years duration.

2.6 Metalwork Trade:

Metalwork: According to Encyclopedia, is the process of working with metals to create individual parts, assemblies, or large scale structures. Jadas (2005) in Yakubu (2014) sees metal work as a discipline which aimed at

training students on the general properties and use of metal in order to help them in materials selection for a particular job, train them on how to differentiate the techniques and approaches for specific work and teach them how to utilize the safety rules and regulations in the workshop.

In view of the above metalwork trades are; mechanical craft/machining processes, welding and fabrication foundry and forging processes.

Technical colleges are institutions where students are trained to acquire relevant knowledge and skills in different occupations for employment in the world of work. Okorie (2001) explained that technical colleges in Nigeria are established to prepare individuals to acquire practical skills and basic scientific knowledge within the confinement of a technical institution or industrial technical education unit. According to the National Board for Technical Education (NBTE, 2004), Technical Colleges in Nigeria are established components such as machine shop practice, welding and fabrication, forging, heat treatment and foundry practices. Ogwo (2002) explained that metalwork involves activities in occupations that entail designing skills, processing and fabrication of metal products; it includes activities in foundry, forging, machine shop and welding. Considering the various importance of metalwork to everyday life and also the overall objective of vocational and technical education (in which metalwork is one) which offers training in skill for self-reliance, self-sufficiency and employment into the world of work; produce craftsmen at the craft (secondary)

level and technicians at the advanced craft (post-secondary) level. Metalwork trade is one of the subjects that are taught in technical colleges in Nigeria. Metalwork trade comprises a blend of both theory and practical that leads to the production of goods and services by the use of tools, equipment and metalwork materials (NBTE, 2001). At the technical colleges, metalwork comprises of other sub-modular trades.

Metal work becomes an important subject to be taught to student. In all these areas of metal work, Idjawe (2003) is of the opinion that required the application of the sciences, mathematics, sound knowledge of the interpretation of engineering drawing, manipulative skills and functioning machines to be able to accomplish these skills and knowledge. Agogo (2011) therefore asserted that without intensive practical work, the theory will only be like a number of ideas in textbook that lack proper technical anchorage.

Instructional material as a mean of teaching and learning attributes towards effective teaching and learning of the metal work trades these are materials which are used as aids in order to make learning permanent and make class lively during the period of use. Utilization of these materials by the teachers makes teaching situation as real as possible while students benefit from the lesson or subject very well. In the light of the above, the material needed should be made available for lesson or subject in order to have a desirable impart on

the students [Nzelum 1993]. Instructional material includes different categories of material such as; visual aids, projection aids, machines e t c.

2.7 Brief History of Katsina State:

Katsina was one of the pre jihad Hausa city states which was conquered and annexed in to the Sokoto caliphate by Malam Ummarun Dallaje in the early part of the 19th century.

After the British colonial conquest in 1903, the Katsina and Daura emirates become Katsina province of the former Northern region of Nigeria. Later, Katsina and Zaria province together formed the North Central State under the Gowon regime's twelve states structure.

North Central State was left intact in 1976 when the numbers of states were increased to nineteen under the new name of Kaduna State. Katsina State came in to the existence on the 23rd of September, 1987 covering the same area of the former Katsina province of the defunct Northern Region.

It's creation along with Akwa Ibom state, raised the number of states from nineteen to twenty one under the Babangida military administration. Hence forth, the agitation for the creation of Katsina State, which dated back to over decade under an umbrella organization called the movement for the creation of Katsina State, come to rest.

Katsina State covers an area of 24, 192Km square. It has a population of 6,483,429 (2005 estimate) population Rank (5th) and comprise in the Northwest Geo-political zone, it share a boarder with Kaduna State from the South, Kano State from East, Jigawa north east, Zamfara State from the west and Niger Republic from the North. History and Culture Breau Katsina State (2014).

2.8 Brief History of Nigeria

Nigeria, with an estimated population of 190, 000,000 is the largest black nation in the world. The Federal Republic of Nigeria, as it is officially known, covers an area of 356,669 square miles on the coast of West Africa. Its borders are contiguous with the Federal Republic of Cameroon and Benin Republic to the east, and Niger Republic to the north. In the northeast, Nigeria has a 54-mile long border with the Republic of Chad, while its Gulf of Guinea coastline stretches for more than 500 miles from Badagry in the west to Calabar in the east, and includes the Bights of Benin and Biafra. Today, Nigeria is divided administratively into thirty-six states and the Federal Capital Territory of Abuja (CIA World Factbook, 2001).

Like Africa as a whole, Nigeria is physically, ethnically, and culturally diverse. This is partly due to the fact that Nigeria is today inhabited by a large number of tribal groups, according to the Encyclopaedia Britannica, an estimated 250 of them speaking over four hundred languages, many with

dialects. Muslims and Christians comprise more than 80 percent of the population while the rest are identified with indigenous religions. However, Nigeria's greatest diversity is in its people. These peoples have so much culture and history that it is imperative to chronicle this history as it relates to their current economic and political struggles. Dating back to the kingdoms and empires of the early seventeenth century, from their involvements in the Atlantic slave trade to its entire merger, this extensive history has blended down to what is currently Nigeria and is thus necessary in order to understand what has become of this once fruitful and promising state.

2.9 The Roles and Qualification of Teachers in Nigeria's Educational Development:

For any Educational plan to meet its objectives, the teacher must be there to see the full implementation of the program. This is so because of it is truth that, no educational system can rise above its teachers. Ukeje (1991) for a tool to be effective constantly maintained Okuena (1993) says, teacher is dispensable factor in any educational system.

The quality of a country's education is determined by the quality of a teacher. Since the teacher cannot offer what he does not have, he must be adequately equipped for his job. In agreeing with above, Ada (1993) says, in any educational system, the success of the process depends very much on the quality

and caliber of teachers who are the interpreters and transmitters of desirable attitudes, skills, knowledge and values in the society.

Amodi (1993) explain that teachers' quality, quantity variety depends on the reliability of the curriculum and reflects the students' quality. Yet the teachers' qualification is an adequate criterion for determining the quality of teaching. Over the years, the average teachers qualification steadily decline could one then conclude that, teachers' quality decrease with increased qualification?

Amodi (1993) further advised that, adequate number and wide variety of teachers are necessary for the curriculum, also necessary to technical educators, instructors and technical teachers to be familiar with the modules. Wankwo (1993) lamented that, operators credentials, physical facilities, goals of the school and procedure need to be examined. The roles that would govern the technical operators of the curriculum must be spelt out. Erickson (1980) agreed that qualified technical teachers, availability of class room, workshops and instructional materials should be sufficient for the curriculum. Ogunmilade (1980) highlighted that the teacher who is trained only once in his career is bound to be static after some years, whereas technical education assumes that education of which teaching and learning is a crucial aspect, is dynamic. You do not give what you don't have, when the teachers are not exposed to new strategies of teaching, more and deeper knowledge of subject matter, more sophisticated instructional materials, effective teaching and learning could not

be said to have taken place. This will adversely affect the quality of education (Agbunno, 1994). The measure of how much the education offered Has turned our people who are intellectual, morally, emotionally, attitudinally, culturally and above all functionally equipped for useful living with the society (Amodi 1993).

In addition, Mamman Dee (2012) reveals that introduction of western education in Nigeria in 19th century saw a total target of technical education. He added that it might be due to the fear of the colonialist that if Africans passed technological knowhow, they would resist their imperialist system of governance. This fear still play a role on Nigeria's technical education development, because the leaders of today don't want to be coupe with our sisters Country, so as to be exposed to the modern world of today.

In another words, this lack of exposure of the teachers to modern system of education make the students to be functionally defective. As Ukeje (1991) put it education.....is the key that unlock the door to modernization, but is the teacher who hold the key to the door....constant and meaningful exposure, a high degree of perfection endures. With his new knowledge, new ideas and modern skills, he raises his work out put update his students' knowledge there by raising the academic standard of the institution. This is why government, institutions and management emphasis the need for practical orientated technical education

curriculum and the need also provide effective teaching of technical subjects in Nigerian colleges (Nkeweke 2007) in (Miller 2011).

The roles and qualification of teachers played in this modern world has to do with educational development of any nation. For anybody to assume the duty of serving as a technical teacher, such a person is expected to possess the needed competencies for imparting technical knowledge and skills, especially now that emphasis is on competency-based learning (Davies 2001) in (Miller 2011). The qualification of teachers in technical colleges and schools is matters in the educational development in Nigeria, those with NCE have to go in-service looking for a bachelor degree up to, those teachers whose are opportuned one can found them up to date and bring the change that is looking for, judging from the government policies, the Nigerian government is very much aware of the critical role of teachers in the implementation of our educational policies that are required to promote national development, National policy on education (2004) vividly states no educational system can rise above the quality of its teachers and purpose of teacher education is to produce highly motivated, conscientious and efficient class room teachers. The Nigerian educational system has witnessed a lot in the area of policy formulation, programs and recommendations from different task forces, commission, committees, workshops seminars, symposia and meetings on how best to produce highly motivated teachers to enable them train and bring up good and

competent children. But unfortunately a gap still exists in the actual implementation of the policies and ideas, resulting in the production of grossly ill-motivated and frustrated teachers.

In spite of this condition, the importance of Nigerian teachers to national development cannot be over emphasized as they are recognized in holding the key to the survival of any nation. From the foregoing, it's not an overstatement to say that no aspect of national development, economic, social, political and moral, that can take place without teachers. Tully in the words of Philip Waylet (2005) in Willian and Aniefiok (2014), one good teacher in a life time may sometimes, changes development into a solid citizen. The more good teachers the nation has, the more the solid citizens and hence more development of the country. Okebukola (1996) summarizes the importance of teacher where he said that the world without teachers is a world without progress and the world that is domed.

2.10 The Importance of Technical Education in National Development:

Technical educations are extremely important in improving and progresssing a Nation's industries while supplying a capable work force. Technical education, if cheap and widespread, can greatly improve efficiency in many industries and can lead to brilliant innovation in others.

Technical education emerged from the desire to satisfy national manpower requirement as dictated by the needs of industry, commerce and local productions as the case may be, vocational and Technical education is that form of education which emphasizes the development of occupational skills needed as preparation for work (Olaitan 1996).

It is a form of education, which promotes the dignity of labour by entrenching work as the goal of education. This explanation is necessary because differences in emphasis in work as the aim of education in the major distinction between vocational technical and general education.

The National policy on education (2004) revised, explains that vocational technical education is that form of education which equipped individuals with appropriate skills, abilities and competencies as equipment for the individuals to live in and contribute to the development of the society.

Technical education apart from enabling the individuals to hold productive employment, technical skills developed in the course of training, increase the productivity of earning capacity of the recipient. Uwadiac (1992) says, a well trained worker is more productive than a poorly trained one.

Consequently, the development of technical skills enables person to earn more remuneration or income other benefits include what Olaitan (1992) refers to as employability and higher job mobility.

People who have been trained for special jobs are highly employable and less likely to suffer severe unemployment than those who are benefits of specific occupational skill. As a result of the versatile uses of which vocational trained worker can put their skills, such workers can change job easily in search of better environment or greener pasture.

According to Okorie (2010) vocational education is that type of education, which develops the mental and physical qualities of people there by increasing their skills, knowledge and attitude required for utilizing the natural resources needed for economic development of the nation and for their own self-improvement. This suggests that vocational education is to assist in the production of suitable manpower with requisite skills, knowledge and attitudes for effective participation in an economy.

Nwadiae (1992) said that vocational technical education refines person's attitude to work.

Technical education enables to make intelligent use of the products of technology, utilize new technologies, develop better skills and become more innovative worker and it also develops in the individual, the feeling that work is both necessary and satisfying. Although the individuals are the primary beneficiaries of vocational technical education, vocational technical education, the society or nation is always the better for it. Vocational technical education reduces dropout rate by providing training opportunities for persons who are not

satisfied with the form of education that are distant from the realistic of the world of works (Oranu, 1991; Olaitan 1992).

In a country like Nigeria where a high rate of unemployment is being experienced, vocational technical education could be employed to cater for the situation by providing job opportunity to the school leavers. Vocational education is a mechanism for meeting the manpower needs of a nation and ensures that available human resources within the society is streamed in to occupation in the bases of needs, interests, abilities and aptitudes so that there is neither over concentration of manpower in a few areas nor-scarcity in others.

Unemployment is a global trend, but it mostly occurs in developing countries of the world, with attendant social, economic, political and psychological consequences Emeka (2013). Empowering youth through vocational and technical education is for a nation that plans to scale in to the first twenty economics of the world, and it has to make a powerful system of technical and vocational education in that country. The fact remains that the industrial and economic development of a country can only be achieved through hard work, dedication and sacrifice of its citizens who can harness the abundant material and human resources for nation building. This is possible when that country accords priority to vocational and technical skills in its educational system (Suleiman 2012).

Olaitan (1996) vocational and technical education is a most reliable vehicle to economic prosperity and political or diplomatic supremacy of a nation over others. For example some advanced developed countries like United States of America have used food and technical aid to support poor countries. They could do these because of the general/ increase in the productive capacity of individuals as well as the positive changes in work habits of those who have received vocational technical education.

The acquisition of practical skills help the receivers function productivity in industries and commercial occupations. It helps one to establish him or herself even in the absence of paid employment. Puyate (2000) observed that for any nation to develop technologically and industrially she must have well trained middle level and higher level manpower capable. Aremu (1996) express that practicality, applicability and functionality of manpower development programs provide employment opportunities for citizenry. As earlier mentioned, vocational skills acquisition empower young people and adult alike to play active roles in any developing economy that seeks to narrow economic and gender disparities; while preserving the integrity of the environment. It is no exaggeration to say that the future backbone of robust social and economic development of nation will be the practical skills.

Technical education can therefore be seen as the formal training a person to become technicians in different occupations. Thus any education that geared

towards teaching technical skills and attitudes suitable to such skills can be regarded as technical education. Uwaifo (2009) posited that technical education is the training of technically oriented personnel who are to be the initiators, facilitators and implementers of technological development of a nation. He opined that this training of its citizenry on the need to be a technologically literate, would lead to self-reliance and sustainability. He stressed that technical more than any other profession has direct impact on national welfare.

2.11 Teaching Methods Employed by Technical Teacher for Teaching

Metalwork:

Many researchers have been written on various teaching methods used in vocational and technical education courses/subjects especially in Metalwork Technology as follows: guided discovery method, lecture method, project method, field trip, demonstration method, exhibition method, programmed instructional method, systematic reporting, questioning method, independent study method, meta learning, cognitive apprenticeship instructional method, modelling method, collaborative method, constructivist method, role play method, buzz group method and explanatory method.

Guided Discovery Method:

The guided discovery method is a student entered guided discovery approach which increases the degree of students' interest, confidence, innovativeness, problem solving ability, creativity and consequently improves their performance

in both theory and practice. Farants (1982), in Ojo (2010) described discovery method as a resource based learning which is an innovation that reverses the usual role of the teacher from that in which he is the main authority and source of all knowledge to one in which he acts simply as a guide to the students to enable him/her to make use of other sources of information. This implies a student entered learning, putting the interest of the student first. The teacher is more interested in the creative ability of the learner (Fatokun and Yalams, 2007), in Nura (2016). According to Bruner, (1997), Wittrick (1997), and Cronback (1996) cited in Ojo (2010), discovery occurs when an individual is involved mainly in using his mental processes to mediate (discover) some concept or principle. The learner should be left out to discover these concepts and principles through problem solving activities. According to Audu (2007), guided discovery method involves an unstructured exploration in some problem solving experience in which the student can draw general conclusions from data which he has gathered through various mental and physical processes such as observing, measuring, classifying, inferring, predicting, communicating describing and formulating relevant questions.

Lecture Method

Lecture method enables teacher to supply information to learners. It does not allow students to participate in the lesson than to receive information passing across by their teacher. Ogwo (1996), described lecture method as a method that is based on the traditional viewpoint that the teacher is an embodiment of

knowledge and it is the responsibility of the teacher to dish out or disseminate the knowledge to the learners who are supposedly ignorant and blank. He further explained that when using lecture method, teachers launch into monologues when giving examples explaining concepts, pointing out relationships and as such, the method has been severally criticized by educators. The intellectuals' passively and weariness of the listeners and lack of discussions are seen to be a contradiction of the process of the free flow of information and exchange of ideas which learning demand (Curzon, 1982), in (Ojo 2010). Okoro (1996) added that the lecture method has only limited use in vocational and technical education. Those teachers should resist the temptation to give lengthy lectures since such lectures are usually dull and are incapable of stimulating and sustaining the interest of students. Tochonites (2000) in (Ojo2010) noted that lecture method is the "sage on the stage method" because the teacher (the sage) only read his note in the class, make few explanations if he likes and may not even entertain suggestions or questions from the students, there is only one way communication. Aguokabue (1994) in (Lawal 2010) added more to lecture method as the one, which belongs to the information processing models of teaching and it involves the teacher telling students facts about a particular topic and expecting the students to memorize what they have been told. Ogwo (1996), identified the weaknesses of lecture method of teaching such as; it is one way communication affair which is autocratic and encourages students passivity; students with learning disability cannot gain

from the lecture method; it encourages rote learning; it is inappropriate for teaching and encouraging students to think for themselves; it does not encourage learners to practice oral communication skills; it relegates to the background individual differences amongst the learners in the classroom. Ukoha and Eneoigire (1996) in (Lawal 2010) stated that lecture method encourages self study, is essential for setting out course objectives and also develop students note taking, listening and summary writing skills. Also the researcher see it as a way of applying student to the content of the subject matter, by introduction or even to presents course outline with some references to prepare themselves.

Project Method

The project method is a method whereby the student or learner performs a unit of activity in a natural manner and in a spirit of purpose to accomplish a definite goal. The project is a learning unit usually conducted by individual students or by groups of students under the guidance of the teachers. The project topic chosen based on the background experience of the study and the work to be completed, is meant to be an original work of the students performing the task. The students are supervised and evaluated based on the physical activities they have performed. Audu (2007) said that students given a free hand to look for problems which are of special interest to them, the project allows the students more flexibility and autonomy in deciding his or her own methods of solving the problem at hand. Therefore the project should be undertaken because;

- 1- The topic is interesting to the learners
- 2- The learners can pursue the task and accomplish his or her **own** solutions
- 3- They will provide the means of inculcating the scientific method in the learners
- 4- They offer opportunities for exhibition ingenuity.

According to Omeje (2004), in (Lawal 2010). project method of teaching is a process which enables learners acquire whole hearted purposes and to pursue them to a satisfactory end Project method according to Onwuka (1981), in (Lawal 2010) makes school work real, uses students experience, motivates natural interests, promotes retention of learned materials, carries the students forward in clearly defined terms, minimizes the chances of waste of time, eliminates irrelevant materials from the curriculum and emphasizes creativeness. The project method is an excellent means of fostering cooperation amongst learners. In group project members of the groups subordinate self in planning. According to Nwachukwu (2001), teachers speaks of projects whenever they have learning activities in which students have the opportunity to choose, plan and direct their work under conditions approximating those of real-life situations. He further said that when practical problems are launched and worked out in the home, the term home project is sometimes used. Steps in

project method of teaching include purpose, planning, execution, and evaluation.

Field Trip

Field trip as a teaching method majorly focus on information firsthand about objects, places, people or processes, to enrich extend, validate or vitalize information from printed material and other sources, or to try to uncover entirely new data (Nwachukwu, 2001). He further explained that the purpose of a trip defines it as a field trip if it is learning, or something else if is not learning. If the trip is learning oriented, it is called a field trip. Since field trips are near real-life, learning provided by them is concrete, sensory and basic. This enables students to see and observe things, places, people and processes in life-setting. Field trips according to Nwachukwu (2006), take students away from classroom boredom and monotony. It offers students the opportunity to know their community, to understand its problems, to appreciate its offering and to identify themselves more with the community. Students become acquainted with community, industries and services.

Demonstration Method

The demonstration method is one of effective teaching methods applied by teachers in achieving objective learning in real life situations. According to Nwachukwu (2006), this method will give the best results when it is given at the

time the students are ready to learn the new material. It is difficult to teach all the vocational subjects by one particular method. This is because the objectives as well as the content to be taught at each point in the lesson help us to determine the method to adopt. Ogwo and Oranu (2006), in (Lawal 2010) also viewed demonstration method as a planned performance by a Vocational/Technical teacher on an occupational skill/information, aimed at explaining the steps/facts of an operation/principle. In essence, a demonstration method is aimed at “showing how” a process, procedure or experiment is carried out. They explained further that this method shows the students what to do and why it is done that way. Baird (1999), in (Ojo 2010) observed that demonstration is one of the most effective teaching methods used in Vocational/Technical education courses, and that it shows students exactly what is to be done, why it is done in a certain way, how to do it, and how to apply the skill or procedure that is essential to completing a given task. In stressing the effectiveness of demonstration, Imogie (1988), in (Ojo 2010) aptly classified teachers according to the teaching technique adopted:

- 1-The mediocre teacher tells
- 2-The good teacher explains
- 3-The superior teacher demonstrates
- 4-The great teacher inspires.

Exhibition Method

Exhibitions as an instructional method stimulates students interest to specific processes, and are also used to emphasize a points already thought in the classroom. They are displays of materials for visitors to observe and from which they can learn. Some schools exhibition may be a result of individual or group projects of students. Here, the students are conducted to the exhibition groomed by the instructor where they will observe the items on display. From such observations, a lot of things could be learnt (Nwachukwu, 2006).

Programmed Instructional Method

This method of instruction according to Nwachukwu (2001) , is the one through which programmed self instructional materials are given to a student to learn at his/her own pace, one step at a time, through a careful structured sequence of teaching points towards specific objectives, with the students making active response and obtaining knowledge of results at each step. The materials or programme may be in linear branching of mathematics or in a variety of mixtures and may be represented in a programmed text or in a teaching machine. Programmed instructional method according to Nwachukwu (2006) includes notable educational psychologists like Skinner and Crowder who began to experiment in the mid 1950s with different teaching machines.

Meta Learning

Meta learning is a teaching innovation relied in the understanding of learning as a constructive process undertaken by the learner and not just receiving, storing and reproducing information. According to Slabbert (1991) in Ojo (2010), the conscious activities of a learner who is intentionally aware of the learning process is called Meta learning. Turner (1986) in Ojo (2010) also viewed Meta learning as a process in which the learner has a deeper awareness of the context and content of study and centering on the hidden curriculum. It is the activity of the learner who is purposefully monitoring the changing objectives of the awareness and consciousness of the learner. Meta learning according to Slabbert (1991) may enable the fine turning of the learner's mind in order to acquire, process and evaluate information. Meta learning according to Cross (2002), in (Lawal 2010) focuses on improving the process on learning including how learners learn, barriers to learning and improving on learning techniques. Meta learning entails consciously working on one's self for the control of the thought process input, through input and output.

Learning Mode

Teachers use learning mode as a teaching method but served as mode of learning to students. According to Akimbobola (2006) learning mode is a corporative learning in which students of different levels of ability to work together in small groups to achieve a purpose. According to Slavin (1992), in

(Lawal 2010) it involved the use of a variety of learning activities to improve their understanding of a subject. Kort (1998) in (Nura) said that students in a group interact with each other, share ideas and information, seek additional information and make decisions about their findings to the entire class. Cooperative learning mode is defined in terms of necessary learning condition (Johnson and Johnson, 2003). Kovaliki (2000) termed cooperative learning as method of instruction, organized so that a group of 2 – 6 students work together to reach a common goal. Cooperative learning mode ties students' success in that there is no way a student can pass or fail without the influence or contribution of other student member (Ogbuanya and Fakorede, 2008). Learning mode as an alternative to traditional learning is a group initiated mode that attempts to establish individual accountability within the group (Slavin, Madden and Stevens, 2001), in (Lawal 2010). Marzano (2003), pointed out that, the most refreshing and affirming thing about the cooperative learning class is that the focus shifts from the individual to the team. Studies have shown that cooperative learning modes have improved students' attitude toward learning, self-esteem, and inter-group relationships (Madden and Slavin 1996).in (Lawal 2010).

Explanatory Method

In using explanatory method of teaching, the teacher relies greatly upon explanations. Explanation is used in conjunction with almost all other methods

of imparting new skills. According to Ogwo and Oranu (2006), explanations start with what the students know and are familiar with them proceeds toward the desired goal. They further explained that skill in the art of explaining requires that the material to be presented should be properly understood. A good explanation should ensure students participation in the instruction.

Questioning Method

This teaching method is another method used by the teachers of Vocational/Technical education for effective communication. Questioning itself is an art. According to Ogwo and Oranu (2006), questioning as a technique of teaching has two vital advantages. First, it enables the teacher to stimulate thinking and elicit responses that will lead to the proper solution to a problem. Second, through questioning, the teacher will determine the amount, direction, and quality of the students thinking. Perhaps, the highest function of the function of the effective teacher is to lead or guide the thought of the students. According to them, the type of question to be used depends on the purpose desired when using questioning method as teaching method. Question may be classified into:

- a- Factual, memory, or recall questions
- b- Problem and application or thought provoking questions, and
- c- Questions to test or to develop understanding.

Questions asked by the students according to Okon (1993) makes the lesson more interesting and effective.

Systematic Reporting Method

A systematic report is a method of instruction frequent used in technical schools. According to Nwachukwu (2006), systematic reporting teaching method involves an oral report by each pupil successive stages through the production of any project in the workshop. Systematic reporting method has the following advantages according to him.

- 1- Each students works at his/her own rate
- 2- The student must consider the various sets of preparation prior to performing them, thus reducing errors.
- 3- The methodology of the natural sciences is applied in the teaching of the applied sciences.

Independent Study Method

This method of teaching is practiced by preparing topics of interest in a problem form and sometimes with study outlines for the students, who on their own go to find solutions to the problems. Hence, the teacher serves as a resource person who gives guidance to the students. The whole idea is to promote imaginative thinking and creative one in the students in the teaching/learning process. According to Olabiyi (2005), independent study

method used by teachers of vocational/technical education has the following advantages:

- 1- It helps to develop the aptitude of students for a given topic/subject matter.
- 2- Students are easily motivated since the topics they are working on are of interest of them.
- 3- Students remember better because they are directly involved in the teaching/learning process.
- 4- At the end of every independent study, students have something to show. This motivates them for further work.
- 5- It is student – centered and all learning takes place.

In individuals, these students can be well developed. Teachers serve as facilitators when this method of teaching is used. It enables students to make use of libraries, film, video, newspapers, magazines, periodicals and website/internet to carry out their studies independent of their teacher.

Cognitive Apprenticeship Instructional Method

Cognitive apprenticeship is a method of teaching aimed primarily at teaching the processes that experts use to handle complex tasks. The focus of this learning through guided-experience is a cognitive and Meta cognitive skills, rather than on the physical skills and process of traditional apprenticeship.

Cognitive apprenticeship method according to Collins, Brown, and Newman (1989), in (Lawal 2010) is an instructional innovation which was introduced to address the problem of impart knowledge. This approach is based on the underlying principle of apprenticeship learning and focusing on the use of such strategies as modeling of behavior and coaching students to mimic expert skills until they are competent in their performance. In apprenticeship method, the teacher simplifies the tasks by using scaffolding (extra help requested by student) and fading (diminishing the assistance and allowing students complete the task through which the student is able to achieve mastery) (Ogwo, 2005).

Cognitive apprenticeship method according to Collins, Brown and Newman (1989) in Ojo (2010) includes modeling, scaffolding, coaching, articulation and exploration. Modeling involved an expert carrying out a task so that students can observe, in this case the expert shows how a process unfolds and tells the reason why it happens that way. Scaffolding is the support the master gives apprentices in carrying out a task. In coaching, the teacher observes students as they try to complete tasks and provides hints and helps when needed. Articulation includes any method of getting students to articulate their knowledge, reasoning or problem-solving processes while exploration involves pushing students into a mode of problem solving on their own through exploration, students learn how to set achievable goals and to manage the pursuit of goals. Augustus (2007) in (2010) also commented that cognitive apprenticeship method of teaching

focuses on teaching of cognitive and Meta cognitive skills associated with a specific domain of knowledge.

Constructivist Method

Constructivist approach tends to shift the focus from the teacher to the students. The essence of constructivist approach which is the modern instructional method is to teach the students how to handle situation which they encounter, the teacher design the situation. The classroom is no longer a place where the teacher pours knowledge to passive students. Learners therefore are not empty vessels waiting to be filled, but rather active organisms seeking meaning (Driscoll, 1994), in (Lawal 2010). The techniques employed in constructivist instructional method include scaffolding, fading cognitive apprenticeship, and collaborative learning. (Pantel, 1997) in (Lawal 2010). Scaffolding that is, teachers support a learner's personal construction of knowledge by offering comments, suggestions, feedback or observation, fading that is once the learner's progress towards mastery, and teachers remove the supports they provide to make the learner self-sufficient. Cognitive apprenticeship, which learners learn by actually engaging in the activity they want to learn about with the supports of knowledge in the field. While in collaborative learning as one of the component of constructivist method, learners develop the knowledge by sharing ideas, reflecting and interacting in learning groups.

Collaborative Learning Method

This method of teaching always employed by the teachers of Vocational and Technical Educations allows the classroom to be more co-operative than competitive. Students begin to view one another as resources rather than sources of ridicule. The social context within which learner resides is crucial to their achievement (Solomon, 1998) in (Lawal 2010). Collaborative learning environment enables learners to identify and reconcile those multiple perspective in order to solve problems (Collins, 1991).

Role Play

It is teaching method in education in which member of a group either individual or in smaller groups acts a role in a given situation. This method according to Ogwo and Oranu (2006) is effective for skill acquisition and appreciation of people's disposition and reactions. It stimulates active participation of learners. However learners may be more interested in the entertainment aspect of the role play than the educative aspect of it. This problem can be eliminated by holding a discussion session at the end of the role play to highlight the major points conveyed through the role play.

Buzz Group Method

This method is effective during a talk, lecture or discussion. Educators adopt this method when learners are reluctant to contribute to discussion or are bored

during a talk. To elicit the participation of learners, the educator raises issue or asks a question. The learners are instructed to form groups of two to six persons and discuss the issue or question in few minutes. At the expiration of the allotted time, the class comes together again and the groups give their report.

2.12 The Roles of Instructional Materials in Teaching and Learning

Metalwork Trades

Instructional materials are aids for effective teaching and learning. They are devices that facilitate, transmits, facts, skills, attitudes, value to the learners so as to promote understanding and appreciation of concepts. Ibrahim (2014) noted that instructional materials are teachers' assistance because they facilitate instruction. Curriculum cannot be effectively implemented without the consideration of necessary equipments and materials. Base on the above, in teaching and learning Metal work trades appropriate materials and equipments encourage and generate interest and motivate the learners as well as create opportunity for active participation of the learners in a lesson.

The use of adequate and appropriate instructional materials in teaching and learning metal work saves teachers time and increase student interests. Aminu (1999) explained that some teachers spend time lecturing or dictating notes to students instead of providing activity lessons. From this quotation, it can be said that instructional materials make teaching and learning activities

easier and permanent. There is general oriented saying that what I hear I forget, what I see I remember and what I do I understand. Therefore, adequate provisions of the appropriate training facilities or teaching aids contribute a lot towards the learning process in metal work.

Aina (1991) pointed out that lack of good training facilities constituting a serious setback in the development of vocational technical education in Nigeria. In light of this, good and adequate training facilities need to be supplied to schools so as to reduce and eradicate setback in the development of vocational and technical education in the country adequate and sound equipments is one of the major prerequisites for effective instruction in technical education. A good technical education should be properly housed and adequately equipped with sound instructional materials.

According to Nzelum (1993) building and well equipped workshops are of permanent importance in the instruction of learning. A well equipped workshop motivates both the teachers and the students towards teaching and learning situation in technical education. If the workshop is well equipped, the students would be interested in what they learned and they would be able to practicalise. Hence, there's need for where instructional materials would be stored. Abolade (1985) observed that instructional materials are classified in five major parts viz:

1. Printed

2. Non-printed
3. Education media
4. Community resources
5. Resource person

It can conclude that, instructional materials, no matter in what forms they are when appropriately used in teaching learning situation will stimulate the learners and enhance teachers effectiveness in teaching. The instructional materials and equipment supplied should be adequate maintained to keep them in a good working condition for effective teaching and learning.

In addition; instructional materials is an aid to teaching and learning. It helps to raise learning from verbalization to practical aspect of teaching and learning. Instructional materials make teaching and learning interesting, easy and amusing, it makes learning more effective Clark, (1997).

2.13 Factors Influencing Teachers Attitudes towards Teaching and Learning Activities:

The teacher placed at the center of teaching and learning to see to the full implementation of the learning activities. But the teachers can only discharge their duties when they are encouraged and composed for it.

Mbiti (1999) maintained that, certain attributes as study toured, in-service courses, annual leaves, attractive salaries, promotion opportunities, equipping

teachers with modern techniques of performing his duties and fringe benefits influences greatly the teachers attitudes towards discharging their duties in schools.

Babatunde (1992) observed that professionalization of teaching will require the introduction of in-service professional training program to teachers from pre-primary to university levels; the in-service training being suggested here should be with full pay, this patience of the teachers. Odoh (1990) and Okwuenu (1999) are of the view that many institutions in the country have poor equipped library and laboratories which adversely affect the teachers in their work. It is being suggested that obsolete books and equipment that full the library and laboratories presently should be removed and relevant ones put in their place which will enhance the performance of teachers and students.

Many teachers today are over burdened by having so many students and subjects to handle. As in some cases teachers teach five to eight courses per term and other teach up to 200 students or more at a time. Another major problem is shortage of staff. Most of the schools are under staffed with few qualified teachers. In such a situation, a teacher sometimes carry six classes and which is too much for him to control and put – in his best.

Adequate welfare scheme for the teachers will bring conducive atmosphere in their places of work, this enhances the teacher initiative, drive and commitment with the resources available to them, they equally raises the

quality of education in the country which is factions of the competence of her teachers to instruct, administer and discipline her client (Agogo, 1994).

Enough classroom blocks should be provided to accommodate all the pupils and students. Again, sufficient seats and desks should be available for them to be comfortably seated. Chalk, dusters, lesson note books, and registers must be adequately supplied. The provision of these will greatly enhances the performance of the teacher and students.

In his findings, Horris (2000) explained that, because of the poor salaries paid to the vocational and technical teachers, many of them are leaving the teaching to take up jobs on private industries creating shortage of manpower in vocational technical education institutions. By the time teachers are duly and promptly paid, it would create a change in the performance i.e. the input and output of the people concerned. This will served as a means of encouragement to them and their interests toward their work and ensures that they would not like to miss any good opportunity for their progress.

In addition, curriculum and instruction; various curricula from the primary to the tertiary level are in the national policy. Ekpenyong (2014) noted that all TVE courses designed by NBTE and NCE relatively take integrated, structure. However, in terms of mode of instruction that can integration, there seems to be some major challenges, particularly in the area of instructional methods. A typical TVE teacher still believes and adopts theoretical

instructional methods, particularly lecture which can hardly give the students practical orientation toward industry or self – reliance. Experimental methods and strategies such as field trips (Uwarneiye and Oriawa, 2006) or industrial visits joint problem solving, critical incident analysis, structured group, among other (Ekpenyong, 2012) are hardly to put use.

Curriculum mention as a factors influencing teacher, the curriculum of a subject with practical content in generally organized into an average of 67% for the theoretical content and 33% for laboratory / workshop. Students also use the laboratory to develop case examples at their own time. Olunlaya (2002) noted that one of the issues confronting the design of appropriate curriculum for vocational and Technical education is preparing in Technology practice. We need curriculum that generates graduates who are a generation of job creators them seekers (Osuala, 2004).

According to Ibrahim (2014) the teacher is the major stake holder in the implementation of the curriculum. Teachers are the determinant of success or failure of an educational program. They are the facilitators, motivators and guide for learning. Teacher's variable such as qualification, availability, competence, attitude, dedication, welfare among other not given adequate attention. He added that, the situation of teachers in some cases is pathetic; for instance, some state in Nigeria one teachers month of salary arrears which

negatively affects their performance and consequently affects the standard of education in such states.

As it was said by many scholars that many of the technical colleges, from a close observation, tend to lack the much needed teaching resources in the forms of books, non – book materials, audio – visual, ICT hardware's and software, models, objects, specimens and work shop tools and consumables that needed to facilitate student learning (Ekpenyong, 2002).

Promotion of technical teachers is a factor that encourages teachers (officer) to keep, and improve their earning better and became more comfortable. Where ever the teachers are feeling comfortable the teaching and learning was improve to optimum level. Albert (2007) in Muhammad (2014) asserted that promotion shall not be made strictly on the basis of competitive merit by selection from among all suitable candidates. In assessing the merits of officers a clear distinction shall be made between their records of performance or efficiency in the lower grade and their potentials for promotion, i.e. ability and competence to perform efficient the duties and responsibilities of the higher post. He added that seniority and previous records of performance will be taken into account in choosing between candidates with equal potential promotion.

How ever, Albert (2007) remarked that the general satisfactory record of conduct shall also be considered. Before each promotion exercise, the responsible authority shall compile a list of all eligible candidates to be

considered, the list being preferred on the basis of the job requirements or set up criteria previously established for the post by the Ministry of Establishments and Training e.g. official qualification /experience, age, training, etc. promotion denotes that an individual has the competencies, i.e. the skills, abilities, knowledge and attitudes, required to perform effectively at the next higher rank. The competencies reflect the knowledge and skills exhibited in observable behavior in the relevant areas of work. Promotion provides motivation to perform well and is an important part of performance management. Eton (1984) lamented that "the payment of salaries, allowances and promotion as the key factors that shape teachers' attitude towards their work".

2.14 The need of Empowering Students and Teachers in Technical

Education:

Empowering technical education teachers and students through educational curriculum reforms is of great importance in Nigeria because Vocational and Technical Education training of teachers had no philosophy that would provide unity and direction of their practice. The system of education was not geared to the needs, condition, and craft of the locality and aspiration of meeting its set target of philosophy, goals and objectives depends to large extent on satisfying the psychological human needs of the individual. (Umunadi, 2012).

The constitution of Nigerian gives all citizens the right of education. But the delivery of education in Nigeria has suffered from years of neglects, compounded by inadequate attention to policy framework within the sector.

Empowering vocational and technical education teachers should be treated with seriousness in order to achieve success and fulfill the national objectives. The purpose of teacher education and empowerment in this regard is to bridge the gap of educating students at different levels. Teacher education as stipulated in the National policy on education emphasized that teachers should receive quality training to cope with the changes and innovation in education system. There is need to acquire knowledge and skills during the training in Nigeria because no education rise above the quality of its teachers.

The National Policy on Education (2004) stipulated that since no education system may rise above the quality of its teachers, teachers' education shall continue to be given major emphasis in all education planning and development. The policy also stipulate minimum qualification for entry into the teaching profession shall be structured to equip teachers for the effective performance of their duties.

The purpose of teacher education should be to:

1. Encourage further the spirit of enquiry and creativity in teachers.

2. Produce highly motivated, conscientious and efficient classroom teachers for all levels of our education system.
3. Help teachers fit into social life of the community and society at large and to enhance their commitment to national objectives.
4. Provide teachers with the intellectual and professional background adequate for their further assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world.
5. Enhance teachers' commitment to the teaching profession.

In addition, the National policy on Education highlighted vocational and Technical education for developing national consciousness, acquisition of skills, intelligent understanding of the complexity and inculcating the right type of value in the individual students.

The aim of vocational technical education as stipulated in the National policy on Education should be:

- a. To provide the train manpower in applied science, technology and commerce particularly at sub- professional grades.
- b. To provide the technical knowledge and vocation skills necessary for agricultural, industrial, commercial and economic development.

- c. To provide people who can apply scientific knowledge to the improvement and solution of environmental problems for the use and convenience of man.
- d. To give introduction to professional studies in engineering and other technology
- e. To give training and impart the necessary skills learning to the production of craftsmen, technicians and other skilled personnel who will be enterprising and self reliant, and.
- f. To enable our young men and women to have an intelligent understanding of the increasing complexity of technology.

2.15 Proper Funding of Technical Education Programme:

Finance is the central to all other resources for any program. The volume of money available determines how far other resources can be provided. The availability or lack of required necessary materials needs from time have an impact on the overall success or failure of a program (Aransiola, 1999) it is in line with (Ohakwe, 1999) who lamented that qualitative education requires quality resources and consequently adequate finance. Technical subject (Metalwork) suffers personnel because no adequate budget provision of technical teachers and workshops attendants.

The few teachers that are available are not better remunerated. The few materials resources needed for growth of teaching learning exercise are not making provision for. Many technical teachers have taken the advantage of poor remuneration to have taken the advantage industries for high pay. The few that are remains are demoralized and have taken teaching as option, tools, machines and other teaching material resources needed to facilitate learning are grounded because of minor fault and lack of simple routine maintenance incentives ruled out in achieving full utilization of availability of materials and teaching resources for the objective of vocational technical education to be achieved (Ojo, 2010) Financing Technical and Vocational Education in Nigeria totally depend on the national budget.

So far, education in Nigeria has received more of quantitative and less of qualitative impetus. But the truth is that both quantity and quality are necessary if education is to produce the right caliber of human resources needed for national development. Considering Vocational and Technical Education as the key for national development (Dike, 2009) it is imperative for this sector to be adequately funded to make it result- driven. This is because Vocational and Technical Education by its comprehensive nature provides the beneficiaries with knowledge, competencies, skills and aptitudes necessary to be useful members of the society. The increasing demands for quality vocational education, better management and competent teachers to Vocational and

Technical Education imply a need for substantial and consistent resource allocation.

In spite of these efforts, under-funding is still the bane of Vocational and Technical Education in Nigeria as could be seen in the inadequacy of infrastructure, human resources and equipment in many institutions at the secondary to tertiary levels. It is unfortunate that, vocational education has always been given the shorter end of the stick when it comes to statutory allocation of finances to the agents of government. It is unfortunate because there is money for Nigeria to sponsor free primary and secondary education (Fafunwa, 2010). According to Fafunwa (2010), Nigeria has money but lacks the ability to use it judiciously. Vocational education holds the key for the solution of Nigeria's developmental problems, yet it is the worst applied instrument for national development (Dike, 2009). In addition to the above, Proper funding of Vocational and Technical Education need not be over emphasized if Nigeria is to provide for adequate training of persons who can proffer solution to our industrial apathy and technological backwardness. The importance of proper funding of Vocational and Technical Education has been acknowledged by many educationists like Adesina (1999), Ukeje (1997), Akpan (2010) in (Affiong and Usoro, 2013) They all agreed that since the program is capital intensive, proper implementation and actualization of its set goals will not be achieved without adequate funding.

Since it has been clear that Government cannot (or has not shown enough goodwill to) single handedly fund Vocational and Technical Education, it becomes imperative to explore the avenue of public-private-partnership (PPP) in an effort to put all hands on deck for the task of delivering the program from its present quack mire, redeem the nation from technological backwardness and save our children from a bleak future.(Affiong,Akpan and Uoro, 2013) According to them, they came up with a wide array of various sources of funding exists that can be explored for the benefit of vocational education growth. They include:

1-Endowment Fund

2-Collaboration with Companies and Non-Governmental Organization

3-Establishment of Internally Generated Revenue Projects

4-Parents-Teachers Association (PTA)

5-Alumni Association

2.16 Summary of literature Review

An attempt is made in this chapter to review related literature on the strategies for Improving Students Performance in Metalwork Trades in Technical Colleges in Katsina State. This was based on the following.

The qualification of metal work trades teachers, the importance of technical education in national development, the roles of instructional materials in teaching and learning metal work trades, factors influencing teachers attitude towards teaching and learning activities, empowering student and teachers of metal work trades. Most of the contributors in the literature are of the view that;

Vocational and technical education is that form of education which emphasizes the development of occupational skills needed as preparation for work. it is that type of education that enable the individual to hold productive employment, technical skills developed in the course of training, increase the productivity of earning capacity of the recipient (Uwadiae1992) although the individuals are the primary beneficiaries of vocational technical education, the society or nation is always the better for it. The use of adequate and appropriate instructional materials in teaching metalwork trades saves teachers time and increases students interests. Aina (1991), Nura (2016) pointed out that lack of good training facilities in constituting a serious setback in the development of vocational technical education in Nigeria.

Mbiti (1999), Muntaka (2018) maintained that, certain attributes as study tours, in-service courses, annual leaves, attractive salaries, promotion opportunities, equipping teachers with modern techniques of performing duties and fringe benefits influences greatly the teachers attitude towards discharging their duties. This will in turn enhance their students performances and competencies.

Nura and Bello (2018) are of the opinion that empowering teachers and students in crucial to any nation education and economy, to empower teacher with strategies new method of teaching new operational skills on modern machine, maintenance and service and scholarship adequate and functional facilities. If teachers are well empowered the students will be the beneficial first and equally empowered. This will enhance the performance of the students.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter describes the various methods and tools employed for data collection for this study under the following sub-headings: design of the study, area of the study, population for study, instrument for data collection, validation of the instrument, reliability of the instrument, method of data collection and method of data analysis.

3.2 Design of the Study

A survey design is adopted in this study to examine the strategies for improving students' performance in metalwork trades in Technical Colleges and Schools of Katsina State Nigeria. A survey research is one in which a group of people or items is studied by collecting and analyzing data from only a few people or items considered to be representative of the entire population (Uzoagulu, 1998). The selection of survey design is keeping with the views of Kelinger (2000) who added that survey research focuses on important facts of people, beliefs opinions and attitudes.

Survey research design is therefore considered suitable for this study because it sought the opinions of metalwork technology teachers in Technical

Colleges in Katsina State of Nigeria on the strategies for improving students' performance and the ways needs for improving and empowering teachers.

3.3 Area of the Study

The study was conducted in the seven educational zones in Katsina State. These are: Daura Zonal education Quality Assurance, Dutsin-ma Zonal education Quality Assurance, Funtua Zonal education Quality Assurance, Katsina Zonal education Quality Assurance, Kankia Zonal education Quality Assurance, Malumfashi Zonal education Quality Assurance, Mani Zonal education Quality Assurance. It covers all the schools offering one or more technical trades in Katsina State.

3.4 Population of the Study

The target population for this study was 135(one hundred and thirty five) respondents, made up of the Director Technical Ministry of Education Katsina State, Director school Ministry of Education, seven zonal Directors and their Assistants, Director Technical Katsina State Science and Technical Education Board, Director school services Katsina State Science and Technical Education Board and his assistant, Principals, vice principals and teachers under the study.

3.5 The Sample of the Study

Since the population of the study was 135, therefore, I take the whole population as a sample of the study.

3.6 Instrument for Data Collection

A structured questionnaire items based on the research questions and review of related literature was designed. The instrument divided in two parts. (See appendix No. 1)

Part 1 was on general information about respondents. Part 2 which was the questionnaire items: section A dealt with qualification of teachers teaching the trades, section B was on instructional materials and other facilities section C focused on strategies, section D was on improving students' performance, section E was on teachers and students empowerment.

3.7 Validation of the Instrument

The instrument was presented to the supervisor for his own comment and thereafter to three (3) other experts in Industrial Technical Education for their comments. Their critiques, suggestions recommendations were used to produce the final draft which produced and administered to respondents.

3.8 Reliability of the Instrument

The Cronbach Alpha (α) reliability test which used a general formula that deals with multiple score items was used to establish the consistency of the instrument, the reliability is 0.85

3.8 Method of Data Collection

The instrument was personally administered to the respondents with the help of two (2) research assistants. The two research assistants were briefed on the methodology for the administration of the instrument and retrieval after they have been duly completed.

3.9 Method of Data Analysis

The data collected from the respondents were analyzed using mean statistics; a five point Likert scale was used, which is as follows:

Strongly Agree - SA - 5 points

Agree - A - 4 points

Undecided - U - 3 points

Disagree - D - 2 points

Strongly Disagree - SD - 1 point

Any instrument whose mean is 3.50 and above as agree (accepted) while any mean below 3.50 has been taken as disagreed (rejected).

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

4.1 INTRODUCTION:

This chapter presented and analyzed the results of this study. The data obtained were analyzed according to research questions; it was presented in a tabular form using mean level frequency table.

4.2 REASEARCH QUESTION 1:

What are the qualifications of teachers teaching Metal Work Trade in the Technical Colleges/School?

In order to ascertain the qualifications of teachers teaching metal work trade, the following ways were identified and presented in the research questionnaire for respondents who indicated their level of agreement as shown in (table-1) below.

Table 1: the mean ratings of respondents on the qualification of Metal Work Trades teachers in Technical Colleges/Schools.

S/N	ITEM	SA	A	U	D	SD	MEAN	REMARKS
1	All teachers teaching metal work have good technical background.	63	22	11	19	20	3.65	Accepted
2	Teachers teaching metal work trades in school attain at least a minimum teaching qualification	70	20	20	11	14	3.89	Accepted
3	The method of teaching adopted by teachers are effective	68	22	18	07	20	3.82	Accepted
4	Teachers of metal work trades make good use of teaching aids while teaching	48	50	02	14	21	3.66	Accepted
5	Teachers of metal work trades use simple vocabularies in class appropriate to the level of students	40	40	17	08	30	3.38	Rejected
6	The teachers teaching metal work trades obtain any additional professional qualification	20	10	21	34	50	2.37	Rejected

Table 1: Research question 1 indicates that respondents have all the needed qualification for teaching in Technical Colleges and Schools except items 5 and 6. The items the respondents have the necessary qualifications are 1, 2, 3, and 4 with corresponding mean ratings of 3.89, 3.82, 3.66 and 3.65 respectively. These items focus on all the teachers teaching metal work trades have good background, the teachers teaching metal work trades in schools attain at least a minimum teaching qualifications, the method of teaching adopted by teachers are effective and teachers of metal work trades makes good use of teaching aids while teaching. This showed that the respondents have the needed

qualifications of teachers teaching metal work trades in the technical Colleges/Schools of Katsina state, Nigeria.

4.3 RESEARCH QUESTION 2:

To what extent are the instructional materials and other facilities for teaching the metal work trades in Technical Colleges are available?

In order to ascertain the availability of instructional materials in the Technical Colleges and other facilities for effective teaching of metal work trades, the following ways were identified and presented in the research questionnaire for respondents who indicated their level of agreement or disagreement as shown, in (Table 2) below.

Table 2: The mean ratings of respondents with regards to availability of instructional materials in Technical Colleges and Schools and other facilities for teaching metal work trades.

S/N	ITEMS	SA	A	U	D	SD	MEAN	REMARK
7.	There is a standard metal work trades workshops in the school	48	41	07	30	09	3.65	Accepted
8.	There are adequate materials for practical exercises in the schools	40	48	12	15	20	3.54	Accepted
9.	The workshops in the school are at the size to accommodate all students during the practical	48	41	07	30	09	3.66	Accepted
10.	There are enough machine tools in the school workshops	45	45	20	20	05	3.75	Accepted
11.	Computer Numerical Control machines	08	02	05	67	53	1.85	Rejected
12.	All machines in metal work trades workshops are functional	12	17	10	38	58	1.94	Rejected
13.	The basic hand tool such as measuring, marking out, cutting, striking, holding device e.t.c. are assorted	48	57	03	20	07	3.88	Accepted
14.	Adequate sheet metal work tool in the workshops	40	48	12	15	20	3.54	Accepted
15.	Adequate foundry and forging tools and devices in the workshops	38	40	10	28	19	3.40	Rejected
16.	There are functional projectors/audiovisuals facilities	09	05	09	60	52	1.21	Rejected
17.	Frequent supply of electricity for operation of machines and other devices	07	16	10	49	53	2.07	Rejected
18.	Functional standby generator in the school	13	16	05	58	43	2.24	Rejected

Table 2 in research question 2 indicated that the respondents agreed with six (6) items out of the twelve (12) items on this questionnaire, disagreeing with the remaining six (6) items. Items 7, 8, 9, 10, 13 and 14 recorded greater availability of instructional materials needed with corresponding mean rating of 3.74, 3.69, 3.65, 3.66, 3.54 and 3.54 respectively, these items focused on there

were enough machine tools in the colleges/ schools workshops, The basic hand tools such as measuring, marking out, cutting, striking, holding device e.t.c. were assorted, There was a standard metal work trades workshops in the school, The workshops in the school were at the size to accommodate all students during the practical, there were adequate materials for practical exercises in the schools, adequate sheet metal work tools in the workshops. This indicated that the respondents needed all the items highlighted above with regards to availability of instructional materials and other facilities in technical schools in Katsina State, Nigeria.

4.4 RESEARCH QUESTION 3:

What are the teaching strategies employed by technical teachers teaching metal work trades in Technical Colleges/School?

In order to ascertain the teaching strategies employed by technical teachers teaching metal work trades, the following ways were identified and presented in the research questionnaire for the respondents who indicated their level of agreement or disagreement as shown in (table 3) below.

Table 3: The mean ratings of respondents with regards to teaching strategies employed by metal work trades teachers in Technical College/ Schools.

S/N	ITEMS	SA	A	U	D	SD	MEAN	REMARK
19	Demonstration method	61	59	03	07	05	4.21	Accepted
20	Explanatory instructional method	53	49	18	05	10	3.96	Accepted
21	Project method	06	05	05	57	62	1.78	Rejected
22	Field-trip/ exhibition	53	49	18	05	10	3.96	Accepted
23	Questioning technique	03	07	05	43	77	1.63	Rejected
24	Constructivist approach method	03	01	07	48	76	1.57	Rejected
25	Group discussion instructional method	06	49	05	67	08	3.57	Accepted
26	Programmed instructional method	01	04	12	63	55	1.76	Rejected
27	Lecture method	38	34	25	18	20	3.38	Rejected
28	Guided discovery method	03	05	01	60	66	1.65	Rejected
29	Learning mode	04	06	03	56	66	1.71	Rejected
30	Role play	06	09	06	61	53	1.91	Rejected
31	Independent study	07	06	04	50	68	1.77	Rejected
32	Cognitive apprentice instructional strategy	05	04	06	50	70	1.69	Rejected
33	Collaborative learning method	44	45	21	20	05	3.76	Accepted
34	Buzz group approach	02	09	05	49	70	1.69	Rejected
35	Systematic reporting strategy	08	08	09	60	50	1.99	Rejected
36	Meta learning strategy	03	02	11	49	70	1.65	Rejected

Table 3 in research question 3 showed that the respondents agreed with 5 items out of the 18 questionnaire items. The items where respondents have highest employed strategies for teaching metal work trades in technical colleges/ schools were 19, 20, 22, 25 and 33 which corresponded with the mean ratings of 4.21, 3.96, 3.96, 3.74 and 3.57 respectively. These items focused on the demonstration method, explanatory instructional method, field trip and exhibition, collaborative learning method and group discussion instructional method.

This showed that the respondents needed the strategies employed in teaching metal work trades in technical colleges/ schools of Katsina State, Nigeria.

4.5 RESEARCH QUESTION 4:

What are the ways of improving student's performance in the metal work trades?

In order to ascertain the proper ways of improving student's performance in the metal work trades, the following ways were identified and presented in research questionnaire for the correspondents who indicated their level of agreement and disagreement as shown in (Table 4) below.

Table 4: The mean ratings of respondents on the ways of improving student performance in the metal work trades.

S/N	ITEMS	SA	A	U	D	SD	MEAN	REMARKS
37	The ratio of students to hand tools is always 1:1	50	63	10	07	05	4.08	Accepted
38	Prompt payment of teachers	48	50	17	11	09	3.86	Accepted
39	Organizing educational visit to industries for students by the schools	40	44	40	11	20	3.54	Accepted
40	Educating parent/guardian on importance of technical education	14	19	02	39	61	2.15	Rejected
41	Providing a well organized library in the schools for teachers and students for further research/e-library	44	45	22	14	10	3.73	Accepted
42	Using audio-visuals devices during the lesson by the teachers	03	04	07	68	53	1.78	Rejected
43	Frequent practical to the students	48	50	02	14	21	3.66	Accepted
44	Recruiting qualified metal work teachers and technologist	54	41	20	10	10	3.88	Accepted
45	Creative practical project by the students	63	22	11	19	20	3.65	Accepted
46	Conducive learning environment	55	60	08	07	05	4.13	Accepted

Table 4 in research question 4 indicated that the respondents agreed with all the items except items 40 and 42 out of 10 items. The items which have higher rate of improving students performance were 37, 38, 39, 41, 43, 44 and 45 which corresponds with the mean ratings of 4.13, 4.08, 3.88, 3.86, 3.73, 3.66, 3.65 and 3.54 respectively. These items focused on conducive learning environment, the ratio of students to hand tools was always 1:1, prompt payment of teachers, providing a well organized library in the schools for teachers and students for further research e-library, recruiting qualified metal

work teachers and technologist, frequent practical to the students, creative practical project by the students and organizing educational visit to industries for students by the schools.

This indicated that the ways of improving students' performance were needed by the respondents for improving student performance in metal work trades in Technical colleges/ Schools of Katsina State - Nigeria.

4.6 RESEARCH QUESTION 5:

To what extent do teachers and learners of the metal work trades being empowered?

In order to ensure the effective empowerment to teachers and learners of the metal work trades, the following ways were identified and presented in the research questionnaire for their respondents who indicated their level of agreement or disagreement as shown in (Table 5) below.

Table 5: The mean ratings of respondents on the empowerment of teachers and learners of metal work trades.

S/N	ITEMS	SA	A	U	D	SD	MEAN	REMARK
47	In service training for teachers	44	45	22	14	10	3.73	Accepted
48	Scholarship, National and International for student and teachers Governmental and non-governmental organization, (NGO's)	12	10	07	46	60	2.36	Rejected
49	Organizing training and re-training of the teachers on metal work machines	40	44	20	11	20	3.54	Accepted
50	Community sponsorship to both students and teachers	04	07	08	60	56	1.83	Rejected
51	Office, office facilities and accommodation to teachers	33	32	10	30	30	3.05	Rejected
52	Vehicle loan to the teachers	24	20	11	40	40	2.61	Rejected

Table 5 in research question 5 showed that the respondents agreed with 2 items out of the 6 questionnaire items. The items in which the respondents checked higher responses were 47 and 49 with corresponding mean ratings of 3.73 and 3.54 respectively. These items focused on in service training for teachers, organizing training and re-training of the teachers on metal work machines.

This indicated that the respondents need empowerment so as to improve the quality of teachers and learners of metal work trades in Technical Colleges/Schools in Katsina State - Nigeria.

4.7 FINDINGS OF THE STUDY

Based on the data collected and analyzed, the following findings were made:

- 1- Qualification of teachers teaching metal work trades in technical colleges/schools
 - a. All teachers teaching metal work trades have a good technical background.
 - b. Teachers teaching metalwork trades in schools attained at least a minimum teaching qualification.
 - c. The method of teaching adopted by teachers was effective.
 - d. Teachers of metal work trades used teaching aids while teaching.
- 2- Availability of instructional materials in Technical Colleges/Schools and other facilities for teaching the metal work trades
 - a. There were standard metal work trades workshops in the school.
 - b. There were adequate materials for practical exercise in the schools workshops.
 - c. The workshops in the schools were at the size to accommodate all students during the practical.
 - d. There were enough machine tools in the school workshops.
 - e. The basic hand tools such as measuring, marking-out, cutting, striking, and holding tools e.t.c. was assorted.

f. Adequate sheet metal work tool in the workshops

3- Teaching strategies by technical teachers for teaching metal work trades in technical schools

- a. Demonstration method
- b. Explanatory instructional method
- c. Fieldtrip and exhibition
- d. Group discussion instructional method
- e. Collaborative learning method

4-The ways of improving students' performance in metal work trades

- a. The ratio of students to the hand tools was always 1:1
- b. Prompt payment of teachers
- c. Organizing educational visit to industries for students by the schools
- d. Providing a well organized library in the schools for teachers and students for further research.
- e. Frequent practical for the students
- f. Recruiting qualified metal work teachers and technologist
- g. Creative practical projects by the students
- h. Conducive learning environment

5-Teachers and learners of the metal work trades being empowered

- a. In service training for teachers
- b. Organizing training and re-training of the teachers on metal work machines

4.8 DISCUSSION OF THE FINDINGS

The discussion of the findings above was presented below:

Findings of this study on strategies for improving student performance in metal work trades related to qualification of teachers teaching metal work trades in Technical Colleges/Schools (Table 1) revealed that the metal work trades teacher needed to obtain additional professional qualification in various fields or areas (trades). It was the number one to consider in teaching industries, one cannot be qualified to teach without processing qualification, for effective teaching, qualification matters.

The professional qualification is obtained by allowing teachers teaching metal work trades to undergo or role into the course or training to acquire a certificate. This was in line with the view of Nura (2014) that is of paramount importance that the metal work trades teachers to participate in a professional course, this was enables them to be up-to-date and exposed to the new machines for practical performance.

The qualification of teachers teaching metal work trades is a work trades is a policy by the government that anybody who is to teach in technical schools, there is a standing order as regards the minimum qualification to teach in Nigeria i.e. a minimum of N.C.E. (Nigerian Certificate of Education) FGN (NPE) 2014.

The needs for minimum standard qualification to teach Ada (1993) suggest that in any educational system, the success or failure of the process depends on the quality and caliber of teachers who are the interpreters and transmitters of desirable attitudes, skills, knowledge and values in the society.

The qualification is something that can be search through attending of formal schools setting and obtain a certificate(s) within a period of time. Iro and Bello (2007) agreed that qualification is a way forward in teaching industries, so qualification makes teachers to be developed and versatile to their areas of specialization(s).

This is in line with the work of Okeke (2004) and Buseri (2011) who viewed a teacher as one who discovers or orders, transmits, disseminates, appraises or administers (knowledge, skills, competences, appropriate value) in any learning and teaching processes and who should posses the following attributes

1. High professional and academic ability and qualification ;
2. Interest and aptitude for teaching;
3. Prior professional education and training;
4. Sound professional attitudes;
5. Grasp of the subject matter;
6. Balanced mental health and emotions ability;
7. Good quality voice and speech; and
8. Good physical appearance.

Findings of this study on strategies for improving students' performance in metal work trades related to availability of instructional materials and other facilities for metal work trades teachers in technical schools.

(Table 2) revealed that the metal work trades teachers' uses instructional materials and other facilities but still they are in need of some.

As a good productive and developed teacher, it is a must to use teaching materials and other facilities for a very sound and qualitative students in any school setting. The use of adequate and appropriate instructional materials in teaching metal work trades saves teachers time and increase student's interests. Iro and Bello (2007) explained that some teachers spend time lecturing or writing notes to students instead of providing activity lessons. From this quotation, it can be said that instructional materials make teaching and learning easier and permanent. The result of their work shows that the groups of students who are taught with sound instructional materials are of higher quality than those sets that teach without instructional materials.

The finding of this study is in conformity with other studies conducted on instructional materials. In other words, results from such studies have shown that the use of instructional materials improved the performance of students (Bower, 1982; Paivio, 1986; Reed, 1985; Dwyer, 1987; Fleming, 1987; Mayer, 1989; Anglin & Carney, 1987; Bassegy, 2002).

However, Bower, 1982; Paivio, 1986 maintained that the processing partnership between visual and verbal information is the foundation of

several theories of long term memory. Among others I hear I forget, What I See I remember and what I do I understanding. Among the qualities of that increase the level of students interest in moderate to heavy richness of detail (Dwyer, 1987; Fleming, 1987). Representational instructional materials are an effective presentation strategy when combined with text. These instructional materials help learners to focus their attention on explanative information in the text (Mayer, 1989).

Findings of this study on strategies for improving students' performance in metal work trades related to strategies employed by technical teachers teaching metal work trades in Technical Colleges/schools.

(Table 3) revealed that the metal work trades teachers are fully adopted on five teaching strategies or methods out of eighteen methods were structured.

It has been known and agreed that there are different science and technology teaching methods but before the 1950's the teaching of science and technology was undertaken mainly as passive transmission of ideas to the learners. This view was called "bank view of learning" (Freire, 1985). According to Watson and Kopniecek, (as cited in Dyer, 2011), the text and curricula of the 1950's did not allow for inquiry. Teaching of science and technology was done as text book oriented. Today, the methods that teachers of science and technology employ in the classroom to present scientific facts, information, principles, skills or concepts to the students are many. Some are more frequently used than others. However, the five methods adopted fully

by metal work trades teachers in this survey study are fall into the methods that are frequently used as stated in Abdullah (as contained in Dyel, 2011).

The finding of this based on strategies/methods of teaching technical subject is in line with the study of Nura (2014) according to the researcher he found out that: demonstration, explanatory, instructional method, field trip, exhibition, group discussion and collaborative methods are positively effective in teaching technical subjects, and are good in changing the performance of students.

Musa (2013) in his study revealed that: demonstration, explanatory, instructional method, field trip, exhibition, group discussion are very essential in teaching and learning metal work trades, the findings is related to research work.

The findings of this study on strategies for improving student's performance in metal work trades related to the ways of improving student's performance in metal work trades.

(Table 4) revealed that the metal work trades teachers are improved since almost all the teachers are fully improved based on the survey research, questionnaire item, ten structures items used shows that hence teachers are improved and the students are equally improved.

This is in line with the research of Nura (2012) in his study he found out some point as a ways of improving students performance, some of these are: the ratio of students to hand tools, frequent practical, conducive learning

environment, recruiting qualified teachers, use of audio-visuals devices, educational visit, well organized library, prompt payment of teachers, among others are very important in terms of improving students performance in metal work trades. He also found out that to improve the student performance, the above mentioned ways must be put into consideration.

The findings of this study on strategies for improving student performance in metal work trades relates to teachers and learners empowerment in Technical Colleges/Schools. (Table 5) revealed that the metal work trades teachers and students need to be empowered. This is in line with what was stated in the National Policy on Education (NPE 2014) stipulated that since no education system may rise above the quality of its teachers, teachers education shall continue to be given major emphasis in all education planning and development. The policy also stipulates the minimum qualification for entry into the teaching profession shall be the Nigeria Certificate in Education (NCE).

This is of the view of Umunadi (2012) in his research work, the entry qualification of the teachers is the minimum or the highest training and retraining of teachers in teachers' education is very crucial. He however added that where ever the teachers were empowered the learners or students can be improved.

This study is in line with the research of Mani (2017); he is of the view that to empowering Technical Education Teachers is as good as feeding the nation, same to students or learners.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter deals with the summary of the study, recommendations and suggestions based on research finding.

5.2 Conclusion

The following conclusions are made based on the findings of the study: the qualification of Metalwork Trades teachers have a good background in technical courses, they attain at least minimum qualification to teach the courses, the Metalwork trades teachers need to obtain any additional professional qualifications.

The availability of instructional materials and facilities in Technical Schools needed for effective teaching, the adequate materials for practical exercise in the workshops, enough machine tools in the workshops, computer numerical control (CNC) machines, functionality of metalwork and machine, in the workshop foundry and forging tools and other devices in the workshop. Frequent supply of electricity, stand by generators, these are needed for effective and positive practical skills needed for metalwork trade students.

With respect to strategies employed by metalwork trades teachers are regards as field trip and exhibition, questioning techniques constructivist approach, group discussion instructional method, lecture method, guided discovery, learning mode, cognitive apprentice instructional strategy collaborative learning method. It is good for teachers to consider the various teaching strategies or methods for better understanding of their students on the ways of improving performance of student in metalwork trades are educational visit enlighten parent on the importance of technical education providing a well organized library, audio-visuals devices, frequent practical feed teachers, creative practical project for encouraging the performances of the student.

Empowering students and teachers enhances the performance of both teachers and their students as scholarship. For national and international studies, office facilities and accommodation, loans such as vehicle loan, it is clear that most of these items need to be provided to metalwork trades teachers for the improvement of student performance.

Generally strategies for improving students performance in metalwork trades has the potential of enhancing metalwork trades students performance, using thesis strategies for improvement of metalwork trades at Technical college/Schools is therefore a welcome idea.

5.3 Implication of the Study

The research work would serve to call attention of the government in providing adequate and latest instructional materials. It will also help the school managers to ensure that adequate supervision is carried out in the school, like wise to ensure that only professional teachers are assigned to teach metalwork trades in Technical Colleges and provide adequate facilities for teaching the course. It also helps community members to contribute their quarter in ensuring the security in the instructional materials, machines and other facilities for their children in Technical Colleges/Schools.

5.4 Recommendations

Based on the findings of this study, the following recommendations are made.

1. There should be motivation informs of allowances (hazard) or incentives to the metalwork teachers.
2. Since it is difficult for the government to provide everything needed by teachers and students, individual, none governmental organization (NGO's) and communities should be involved in the provision of some of the needed material for teaching and learning technical subjects metalwork in particular.

3. Teachers should inculcate the habit of researches and advancing their knowledge so as to be acquainted with new inventions, new technologies and new method of teaching technical courses.
4. Government should initiate a program that enables schools to use the machines and equipment provided as sources of income to the government and to the school to help run the school.

5.5 Suggestion for further Study

From the finding of this study and recommendations made there in, the researcher suggested that further study should be carried out on.

1. Similar study can be conducted in tertiary institutions to find out the strategies for improving student's performance in metalwork trades in higher level of education.
2. An investigation of the availability of instructional materials for teaching metalwork trades in Technical Colleges of Katsina State.
3. Strategies for improving skills needed in metalwork trades in tertiary institutions.

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APPENDIX 1

SUDAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, KHARTOUM.

COLLEGE OF GRADUATE STUDIES

Dear respondent,

I am a postgraduate studies student of the above named university, carrying out a research work on the topic “**Strategies for Improving Students Performance in Metal work Trades in Technical Colleges and Schools Katsina State, Nigeria.**”

I will be grateful if you could answer, the questions provided below, as your data will surely be of high significance to this research work, all information given will be using purposely this study and be treated as confidential.

Bello Aminu

Research student

SECTION (A) Personal Data

AGE..., SEX....., MARITAL STATUS.....,

QUALIFICATION.....

....., YEARS OF TEACHING EXPERIENCE.....

RESEARCH QUESTION 1

Qualification of teachers Teaching Metal Trades

S/NO	Items	SA	A	U	D	SD
1.	All teachers teaching metal work have good technical background					
2.	Teachers teaching metal work trades in school attain at least a minimum teaching qualifications					
3.	The method of teaching adopted by teachers are effective					
4.	Teachers of metal work trades makes good use of teaching aids while teaching					
5.	Teachers of metal work trades uses simple vocabularies in class appropriate to the level of understanding of students					
6.	The teachers teaching metalwork trades obtain any additional professional qualification					

RESEARCH QUESTION 2

Availability of instructional materials and facility in technical schools

S/NO	Items	SA	A	U	D	S D
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7.	There is a standard metalwork trades workshops in the school					
8.	There are adequate materials for practical exercise in the schools workshops					
9.	The workshops in the school are at the standard size to accommodate all students during the practical					
10	There are enough machine tools in the school workshops					
11	Computer Numerical Control (CNC) machines					
12	All machines in the metalwork trades workshops are functional					
13	The basic hand tools such as measuring, marking out, cutting, striking, holding devices etc are assorted					
14	Adequate sheet metalwork tools in the workshops					
15	Adequate foundry and forging tools and devices in the workshops					
16	There is functional projectors/audiovisuals facilities					
17	frequent supply of electricity for the operation of machines and other devices					
18	Functional Stand by generator in the school functional					

RESEARCH QUESTION 3

Strategies employed by teachers teaching metalwork trades

S/NO	Items	SA	A	U	U	SD
19	Demonstration method					
20	Explanatory instructional method					
21	Project method					
22	Field trip and exhibition					
23	Questioning techniques					
24	Constructivist Approach method					
25	Group discussion instructional method					
26	Programmed instructional method					
27	Lecture method					
28	Guided discovery method					
29	Learning mode					
30	Role play					
31	Independent study					
32	Cognitive Apprentice instructional strategy					
33	Collaborative Learning method					
34	Buzz Group Approach					
35	Systematic Reporting strategy					

36	Meta Learning strategy					
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RESEARCH QUESTION 4

Ways of improving performance

S/NO	Items	SA	A	U	D	SD
37	The ratio of students to hand tools is always 1:1					
38	Prompt payment of teachers					
39	Organizing educational visit to industries for students by the schools					
40	Educating parent/guardian on the importance of technical education					
41	Providing a well organized library in the school for teachers and students for further research/e-library					
42	Using audio-visuals devices during the lesson by the teachers					
43	Frequent practicals to the students					
44	Recruiting qualified metalwork teachers and technologist					
45	Creative practical project by the student					
46	Conducive learning environment					

RESEARCH QUESTION 5

Empowering students and teachers

S/NO	Items	SA	A	U	D	SD
47	I service training for teachers					
48	Scholarship national and international for students and teachers					
49	Organizing training and re-training of the teachers on metalwork machines					
50	Community sponsorship					
51	Office, and office facilities accommodation to teachers					
52	Vehicles loan to the teachers					