

**MECHANISM FOR IMPROVING THE PERFORMANCE OF MASTER CRAFTSMEN FOR
EFFECTIVE WELDING ACTIVITIES IN NIGER STATE.**

BY

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FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY
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OCTOBER, 2012.

CERTIFICATION

I LABINJO OLORUNTOBI Matric No. 2007/1/28614BT an undergraduate student of the Department of Industrial and Technology Education certify that the work embodied in this project is original and has not been submitted in part or full for any other diploma or degree of this or any other institution.

Name

Signature & Date

APPROVAL PAGE

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

.....
Supervisor

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Sign/Date

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Sign/Date

DEDICATION

This project is dedicated in memory of my father , Late Major Labinjo Abayomi kayode . May his gentle soul rest in perfect peace. Amen

ACKNOWLEDGEMENT

All I have to say is, thank you lord.

I give my greatest appreciation to the Almighty God and His son Jesus Christ for His Love, care, provision, strength and grace given to reach this level of academic attainment.

For this academic job well done, a good number of notable men and women had sacrificially contributed their quota. Time will fail me to mention them all. Nevertheless I did acknowledge every one of them far and near.

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My profound and whole-heart gratitude goes to my mother, Mrs Ngozi Labinjo and my brother labinjo Tosin who showed sincere care, gave advice, counseled guided me in due time, may almighty God reward them accordingly and may they live to enjoy the good of the lord and the fruit of their labour.

Finally I appreciate my friends, church members and well wishers. God will bless you all for all you did in my life and to the success of my project.

TABLE OF CONTENT

Preliminary page	page
Title page	i
Certification	ii
Approved page	iii
Dedication	iv
Acknowledgement	v
Table of contents	vi
List of tables	ix
Abstracts	x

CHAPTER I INTRODUCTION

Background of the Study	1
Statement of the Problem	5
Purpose of the Study	6
Significance of the Study	6
Scope of the study	7
Assumption of the study	7
Research Questions	8
Hypothesis	8

CHAPTER II
LITERATURE REVIEW

History and Development of welding and craftsmanship	9
Welding and fabrication work	16
Linkage programme between artisan in minna Metropolis and industries to improve practical skill acquisition	16
Approach to improvement of the performance of master craftsmen in Minna Metropolis	
Summary of the literature review	21

CHAPTER III
RESEARCH METHODOLOGY

Research Design	26
Area of the Study	26
Population	26
Instrument of data Collection	27
Validation of the Instrument	27
Administration of the Instrument	27
Method of Data Analysis	28
Decision rule	29

CHAPTER IV
PRESENTATION AND ANALYSIS OF DATA

Research Question I	30
Research Question II	32
Research Question III	33
Research Question IV	34
Hypothesis one	35
Hypothesis two	36
Findings	37
Discussion of findings	38

CHAPTER V
SUMMARY, CONCLUSION AND RECOMMENDATION

Summary of the Study	42
Implication of the Study	43
Conclusion	43
Recommendation	44
Suggestion for Further Research	45
References	46
Appendices	

CHAPTER I

INTRODUCTION

Background of the study

In today's society welding is one of the most sought after trades. Most companies and factories are looking to hire people who have had some form of training with regards to welding. Welding was not always this popular. At one time it was seen as a lower class profession and people, who were employed as welders, were not paid a high wage for the work that they do. However, today in society we see a different trend. The welding profession is considered a good trade and most welders are paid a good wage for the work that they do. Like any other profession there are variations in the amount of money that welders are being paid but this all depends on where you work and which type of welding work you do.

The area of welding itself dates back as far as 1885 when two people by the names of Nikolai Benardos and Stanislaw Olszewski invented the first electric arc welder. They were granted the patent for their invention a few years later. This welding was called an electric arc welder that had a carbon electrode called an Electrofest. These two men are considered to be the founders and creators of the modern welding that we see being used today as all models of welding came from the first one that was created.

While we are all aware of the lots of manufacturing jobs both regionally and nationally, there is one segment of manufacturing that is expected to see increased demand for trained professionals. That's the field of welding. According to the American Welding Society, there will be a need for more than 250,000 new and replacement welding professionals nationally through 2019.

Because welding is used in so many different industries, the need for welders is growing. The demand for trained welders is exceeding supply, and that demand is compounded by the expected retirements of many old welders, which will create even more opportunities(jim 1990 and jean B 2003).

The industries that will continue to see a need for welding professionals include aerospace, construction, agricultural, ship building, automotive, medical devices, general manufacturing, nuclear, and chemical processing among others. About 95 percent of all manufactured goods in the United States utilize welding or require that materials be joined through some welding processes.

Welding professionals deal with a variety of problems and must develop solutions to those problems. The work is very challenging.

Like many other technical professions, there are several employment levels that an individual can pursue. They include a welder, welding technician or welding engineer. Levels of responsibilities differentiate the duties between each of these professions.

A welder is skilled in the use of manual welding equipment and the techniques that are needed to utilize various welding processes. A welder must be knowledgeable in metallurgy, engineering codes, standards, and requirements. A welder must be able to analyze engineering drawings and specifications in order to plan welding operations.

Welding technicians have expanded responsibilities that include designing and conducting tests and experiments. They evaluate data to assist welding engineers in the development of new and improved welding equipment and materials. Welding technicians also inspect welded joints and conduct tests to ensure that welds meet all code requirements and customer specifications.

Welding engineers develop welding techniques, procedures and applications to address problems with welding equipment in relation to the fabrication of metals. They must utilize their knowledge of production specifications, the properties and characteristics of metals and metal alloys, and engineering principles to achieve the desired results. They also conduct research and development of new fabrication processes and procedures. They may direct other welding personnel in the performance of their duties to ensure that there is compliance with all established procedures, standards and codes.

There are some people that are not completely sure what welding actually is. There are a variety of definitions of welding but the most commonly used definition stated that welding is a technique that is used to join metallic parts usually through the application of heat. So in a sense it is the art of burning metals together in some way. Welding was first discovered during the efforts to manipulate iron into useful shapes.

Statement of problem

Welding and fabrication has to do with the designs and constructions in various industries especially metal construction industries. But unfortunately, of recent times, it has been observed that the performance of these master craftsmen, has drastically dropped and the jobs carried out by them are either too inferior or too local and not up to standard, so due to the incompetence of the master craftsmen, people now prefer to go for foreign products even though the foreign ones are more expensive. If the tools go bad, instead of taking it for repairs they still prefer to dispose of it and purchase a new expensive foreign one, than trying a locally manufactured product by the master craftsmen. The procedure for improving the performance of master craftsmen for

effective welding practice in Niger state are being observed and discussed. The main problem is the standard of performance deemed appropriate for successful completion of tasks. Who are craftsmen? Craftsmen are skilled and adept trade workers that use hand tools, power tools and automated machinery in their daily work. They may spend years perfecting their craft and can be a jack-of-all-trades or highly specialized in their knowledge and abilities. A craftsman may produce anything from furniture to bedsprings to auto parts depending on their skill set.

A master craftsman or master tradesman (sometimes called only master or grandmaster) is a member of a guild. In the European guild system, only masters were allowed to be members of the guild.

An aspiring master would have to pass through the career chain from apprentice to journeyman before he could be elected to become a master craftsman. He would then have to produce a sum of money and a masterpiece before he could actually join the guild. If the masterpiece was not accepted by the masters, he was not allowed to join the guild, possibly remaining a journeyman for the rest of his life. Originally, holders of the academic degree of "Master of Arts" were also considered, in the Medieval universities, as master craftsmen in their own academic field. So, for the craftsman to attain the standard of performance deemed appropriate for successful completion of task, he must have been properly trained and should be an academic degree holder and also must have passed through the career chain, from apprentice to journeyman before he could be elected to become a master craftsman or crafts woman, and these is one area that is seriously been affected. Most self proclaimed master craftsman lack this basic training in Niger state.

Manual dexterity is of keen importance to the craftsman, but gaining experience is key to a craftsman's success and survival. One way that a craftsman can gain experience is by working as an apprentice to a more skilled and established craftsman. There are programs that can assist those seeking apprenticeships in the trade. A master craftsman program might be of particular interest to craftsmen interested in entrepreneurship and learning trades from the inside out. Also, it is important for the master craftsman to stick to a statement of instructional intent which is called “task”, which describes the specific action to be demonstrated and the standard of acceptance performance which must be exhibited and describes the condition under which the task is to be performed.

PHCN which means Power Holding Company of Nigeria. Has indeed been holding the power to themselves, causing power outage and making people depend on fuel or diesel powered generators which are now quiet difficult to maintain due to the Government’s removal of subsidy on all petroleum products. Now to remain in business or to establish one, you will need to have a fuel or diesel powered generator which will incur an extra expenditure minus the working capital needed to run the business and this is a very serious problem for both new and old people in the business because the equipments used in a welders workshop are heavy duty machines which require a lot of current to power them, meaning a heavy duty generator and a lot of fuel is required and that will cost a lot to achieve.

Access to finance: No nation that looks forward to industrialization will ignore the acquisition of technical skill of her citizen. Technical skill acquisition in welding practice has been facing poor funding while trying to achieve it’s goals. Even a very good crafts with a lot of ideas will need money to establish his self in the trade, so access to finance is a

serious problem. Another pressing challenge in improving the performance of master craftsmen is the skill gap and training need. Lack of sufficient funds to carry-out a good master piece and no advanced re-training programme to improve already acquired skills. Based on the foregoing therefore, this study is designed to find out the mechanism for improving the performance of master craftsmen in Niger state.

Purpose of the study

The purpose of the this study is to determine the mechanism for improving the performance of master craftsmen for effective welding practice in Niger state specifically the study will find out:

1. Strategies for standardizing the workshop of welding and fabrication among artisan in Minna metropolis.
2. Adequacy of the tools and equipment used by the artisans in Minna Metropolis.
3. Basic teaching activities to be used to improve practical skill acquisition of welders and fabricators in Minna Metropolis.

Significance of the study

This study will be beneficial to:-

Artisans, craftsmen , technicians and technologists to improve their performance, practical skills and ways to adjust to the right tools and the right jobs. These Research work was conducted in Minna because there are a large number of welders and fabricators around always manufacturing a lot of items and nobody is willing to buy these items due to the low standard of these items, now these items just sit under the sun everyday and waste, causing the items to dilapidate and no profit it derived from these items .

These Research work will also help the physically challenged people in society by giving them a form of skill that will empower them. Government will benefit from the study by determining strategies adopted for retaining the improved performance of master craftsmen it will also help the Government to rehabilitate the disable members of the society. It will also serve as a feedback to the parents that the rate of unemployment is reduced among the youths in Minna.

Scope of the study

Mechanism for improving the performance of master craftsmen for effective welding activities in Niger state. These research work will cover most Master craftsmen that engage in welding and fabrication employing the use of either arc welding or gas welding only. The research work will not cover other forms of welding processes like stud welding , spot welding and soldering because their application is limited when it comes to the aspect of fabrication.

Assumptions of the study

The researcher believes that the following assumption will help in carrying out the study.

1. Response from the respondents will provide valued information for realistic decisions and the techniques for improving the practice and performance of welding and fabrication among artisan in Minna metropolis.
2. The selection sample represents the entire population.

Research questions

The following questions were used to help the researcher in collection of his relevant data.

1. What are the Strategies for standardizing the workshop of welding and fabrication among artisan in Minna metropolis?
2. How adequate are the tools and equipments used by the artisan in Minna Metropolis?
3. What are the basic teaching activities to be used to improve practical skill acquisition of welders and fabricators in Minna.

Hypotheses

The following hypothesis were formulated to guide the study

HO1: There will be no significant difference between the mean responses of Industrial personnel and welders on the Strategies for standardizing the workshop of welding and fabrication among artisan in Minna metropolis.

HO2: There is no significant difference between the mean responses of industrial personnel and welders regarding adequacy of tools and equipments used by artisans in Minna Metropolis.

CHAPTER II

REVIEW OF RELATED LITERATURE

In this chapter the review of related literature is done under the following sub-headings:

1. History and Development of welding and Craftsmanship.
2. Welding and Fabrication Work.
3. Linkage programme between Artisan in Minna Metropolis and industries, to improve practical skill acquisition.
4. Approach to Improvement of the performance of master craftsmen in Minna Metropolis.
5. Summary of literature Review.

History and Development of welding and Craftsmanship.

Welding touches virtually all construction, manufacturing, and repair work. Welding is used to build projects such as aircraft, tanks, satellites, weapons, machinery, heavy equipment, trucks, helicopters, trains, power generation units, ships, etc. Some typical projects for construction welders include bridges, power plants, airports, prisons, breweries, refineries, aqueducts, dams, hi-ways, shopping malls, railroads, and gas, oil, and water piping systems. Welders will also be involved in the maintenance, repair, and modification of these projects.

Most people think of tradesmen who weld as “Welders”. Care must be used if researching job opportunities and wage rates for “Welders”. Welding is done by many crafts. Some fulltime “Welders” work in specialized fields that classify them as “Pipe Fitter,” “Boilermaker,” “Ironworker,” “Sheet Metal Worker,” “Sheet Metal Mechanic,” “Fitter,” or “Fabricator”.

Regardless of title, welding is integral to all these crafts. Additionally, electricians, carpenters,

mechanics, machinist, millwrights, maintenance men, and other tradesmen commonly weld, occasionally approaching fulltime.

Work conditions vary widely. Welding may be done under extremely comfortable and clean conditions for aerospace work, or even in a “clean room” environment during manufacture of equipment for computer chip production operations, or other highly sensitive items. More commonly however, welding is done outdoors on construction sites, or in indoor heavy industrial settings. Heavy industrial work environments require hands who aren’t afraid of dirt and sweat. Many require dedicated professionals who can produce code quality welds in all positions, in uncomfortable and difficult to access locations, sometimes high above the ground, while close to other loud and distracting work operations.

Welders are employed by small job shops, mobile repair companies, private and corporate manufacturers, construction contractors, utility districts, and various city, county, state, and federal governmental branches. Pay varies widely based on skill level, technical knowledge, work habits, and geographical location. Some welders working in small private shops doing low skill level work may barely make over minimum wage, while highly skilled union journeymen construction workers in Washington typically earn \$25 to \$26 dollars per hour base pay, plus about \$10 to \$11 per hour in benefits. (Goodman P. 1992)

While many welders enjoy the challenging nature and visible end product of their craft, a welding background provides many opportunities as well. Experienced welders may move on to become business owners, welding engineers, welding inspectors, quality assurance personnel, supervisors, welding procedure writers, testing lab technicians, equipment salesmen, consultants,

or educators. A formal education is an important component to skill building, entry opportunity, and advancement.

The History of Welding.

Welding is a method of repairing or creating metal structures by joining the pieces of metals or plastic through various fusion processes. Generally, heat is used to weld the materials. Welding equipments can utilize open flames, electric arc or laser light. The earliest evidence of welding can be traced back to the Bronze Age. The earliest examples of welding are welded gold boxes belonging to the Bronze Age. The Egyptians also learnt the art of welding. Several of their iron tools were made by welding. During the Middle Ages, a set of specialized workmen called blacksmiths came to the fore. Blacksmiths of the Middle Ages welded various types of iron tools by hammering. The welding methods remained more or less unchanged until the dawn of the 19th century. (Wikipedia, 2012) In the 19th century, major breakthroughs in welding were made. The use of open flames (acetylene) was an important milestone in the history of welding since open flames allowed the manufacture of intricate metal tools and equipments. Englishman Edmund Davy discovered acetylene in 1836 and acetylene was soon utilized by the welding industry. In 1800, Sir Humphrey Davy invented a battery operated tool which could produce an arc between carbon electrodes. This tool was extensively used in welding metals. In 1881, French scientist Auguste De Meritens succeeded in fusing lead plates by using the heat generated from an arc. Later, Russian scientist Nikolai N. Benardos and his compatriot Stanislaus Olszewski developed an electrode holder for which they secured US and British patents.

During the 1890's, one of the most popular welding methods was carbon arc welding. Around the same time, American C.L. Coffin secured a US patent for metal electrode arc welding. N.G. Slavianoff of Russia used the same principle for casting metals in molds. Coated metal electrode was first introduced in 1900 by Strohmenger. A coating of lime helped the arc to be much more stable. A number of other welding processes were developed during this period. Some of them included seam welding, spot welding, flash butt welding, and projection welding. Stick electrodes became a popular welding tool around this time as well. After the end of World War I, the American Welding Society was established by Comfort Avery Adams. The aim of the society was the advancement of welding processes. CJ Holstag also invented the alternating current in 1919. However, alternating current was first commercially utilized by the welding industry only in the 1930's. Automatic welding was first introduced in 1920. Invented by P.O. Nobel, automatic welding integrated the use of arc voltage and bare electrode wires. It was used for repairing and molding metals. Several types of electrodes were also developed during this decade. The New York Navy Yard developed stud welding. Stud welding was increasingly used for the construction industry and also for shipbuilding. It was during this time that the National Tube Company developed a welding process called smothered arc welding. In the sector of shipbuilding, the stud welding process was replaced by the more advanced submerged arc welding. A new type of welding for seamlessly welding aluminum and magnesium was developed in 1941 by Meredith. This patented process came to be known as Heliarc welding. The gas shielded metal arc welding or GTAW was another significant milestone in the history of welding which was developed in Battelle Memorial Institute in 1948. The CO₂ welding process popularized by Lyubavskii and Novoshilov in 1953 became a welding process of choice for welding steels, as it was comparatively economical. Soon, electrode wires of smaller diameter

were launched. This made welding of thin materials more convenient. There were several advancements in the welding industry during the 1960's. Dualshield welding, Innershield, and Electroslag welding were some of the important welding developments of the decade. Plasma arc welding was also invented by Gage during this time. It was used for metal spraying. The French also developed electron beam welding, which is still used by the aircraft manufacturing industries of the United States. (Pender A 1988)

Some of the recent developments in the welding industry include the friction welding process developed in Russia, and laser welding. Laser was originally developed in Bell Telephone Laboratories but it is now being used for various kinds of welding work. This is due to the inherent capacity of lasers in rendering precision to all kinds of welding jobs.

Master craftsman

A master craftsman or master tradesman (sometimes called only master or grandmaster) was a member of a guild. In the European guild system, only masters were allowed to be members of the guild.

An aspiring master would have to pass through the career chain from apprentice to journeyman before he could be elected to become a master craftsman. He would then have to produce a sum of money and a masterpiece before he could actually join the guild. If the masterpiece was not accepted by the masters, he was not allowed to join the guild, possibly remaining a journeyman for the rest of his life.

Originally, holders of the academic degree of "Master of Arts" were also considered, in the Medieval.

The Guild of Master Craftsmen continues a tradition established by the guilds of medieval Europe. The earliest of these were "frith" or "peace" guilds - groups bonded together for mutual protection following the breakdown of the kins, which were groups related by blood ties.

Merchant guilds - associations of international trades - were powerful in the twelfth and thirteenth centuries, but lost their ascendancy with the rise of the craft guilds - associations of master craftsmen, journeymen, apprentices and the various trades connected with a particular craft. The world-renowned College of Arms in London awarded the coat of arms of The Guild of Master Craftsmen in 1992, after four years of assessment. Designed by heraldic expert Peter Greenhill to reflect the many categories of Guild membership, it features: three escutcheons (shields) to represent artists, painters and strainers ; a pair of compasses opened in chevron for building , construction and carpenters ; a dovetail (separating the top third of the shield from the rest) to represent cabinetmaking , woodworking and joinery; and a gavel and chisel for masons and stoneworkers. The southern keep of Lewes Castle, which overlooks the Guild's headquarters, is featured above the helmet as the crest. (Howard S. 1950)

While guilds as such do not exist, many trades continue the apprentice-journeyman-master model. Carpenters, electricians, pipefitters , and plumbers are notable examples. Even in academia , the tradition survives, with elementary, middle and high school completing general education; with post secondary degrees awarded in the Associates, Bachelor and Master levels; and PhD students as apprentices, post-docs and associate professors as journeymen and full professors as masters.

The paper which needs to be presented in order to get an academic degree, proving the student's proficiency in the chosen subject and whose quality is examined by existing lecturers, is in effect

a form of the medieval masterpiece which needed to be prepared by anyone seeking to be accepted as a master in any professional guild. The terms Master Mariner and harbormaster reflect the fact that the holders of such positions were originally Master craftsman in the Seamen's Guild. Further derived from "harbormaster" is "stationmaster", though guilds no longer existed when railways came into being. A master discusses a vacuum compressor with his apprentice boy and several other crafts persons. While guilds have also been abolished in Germany, the ranks of apprentice, journeyman and master craftsman have been retained until today. For many crafts any business in the trade still has to be run by a master craftsman or has to employ at least one *Meister* to be allowed to run a business of that craft. Journeymen and masters are by law automatically members of their regional Chamber of the skilled crafts which is a self governing public body. The Chamber is the organiser of the technical vocational educational training and oversees the examination of the journeymen and masters. The justification for this is the (perceived or actual) higher quality which is achieved by businesses run by master craftspeople. Lately, several crafts have had the requirement for businesses to have a master of the craft removed; however, any craft that is perceived as being security relevant, for instance electricians and chimney sweeps, still has this condition and it is unlikely to be waived in the near future.

The German *Meister* qualification for a master craftsman is neither a degree nor is it comparable to the academic Master's degree. It, however, qualifies the holder to study at a University or Fachhochschule, whether the *Meister* holds the regular entry qualification or not.

The Master craftsman is the highest professional qualification in crafts and is a state-approved grade. The education includes theoretical and practical training in the craft and also business and

legal training, and includes the qualification to be allowed to train apprentices as well. The status of Master craftsman is regulated in the German *Gesetz zur Ordnung des Handwerks, HandwO*).

The requirements to become a master craftsman are usually an education in the crafts in which the examination should be taken (a successfully completed apprenticeship and examination, called *Gesellenprüfung*) and experience of at least 3 to 5 years as a journeyman (Geselle). Only then can training courses for the *Meisterprüfung* ("Master's examination") be followed. The duration of the courses depends on the craft and can take 4 to 6 years. The examination includes theoretical, practical and oral parts and takes 5 to 7 days (depending on the craft). In some crafts the creation of a masterpiece is also part of the examination.

Master craftspeople who do not run their own business usually have a leading position in a larger commercial enterprises. This is due to the trend that many German-based companies prefer to hire master craftspeople (or Fachhochschule graduates) rather than university graduate as technical managers (mostly mid-level management) as the education is more practical, and because these craftspeople also acquire some theoretical skills and business knowledge during their training. German master craftspeople are in demand across the European Union as a result of the high quality of vocational education. (Montreal W.D 2005)

Welding and fabrication work

According to American welding society (1947) welding is often used to join metals. Welding is also defined as a group of welding processes where coalescence is produced by heating to suitable temperature above 800°F and by using a non ferrous filler metal having a melting point below that of the base metal, Umar (2008) added that welding technology comprises of various

types such as Gas welding , Arc welding , stud welding, spot welding, soldering welding etc, but an artisan's work will be limited to arc and gas welding.

This is the metal joining process where fusion of the metal is achieved by generating an electric between a coated metallic electrode and the work piece the heat produced by the electric arc the melts the metal which mixes with the molten deposits of line coated electrodes. A power supply units furniture direct or alternating current to provide the aired energy. The metallic electrode carries the current to form the aired, produces a gas which shields the arc from the atmosphere and adds metal to control the head shape. The molten pool of the weld shape solidifies.

Gas welding is a process in which coalescence is achieved by directing gas flame over metal where a filter rod may or may not be used to intermix with molten puddle. The energy required for welding development is the combustion of a with oxygen or air. Gas welding has limited application for industrial production purposes because it is much slower than other welding process.

Linkage Programme between Artisan in Minna Metropolis and industries to improve Practical skill acquisition.

In African society, artisan often begins with personal service to a master through various technical training that were neither institutionalized nor organized. Ezeji's (1992) say, the purpose of education (technical skills) is to make the individual a functional member of his society. According to Goodman (1992) the totality of a man's environment especially his interaction with tools, equipments and co-workers provides him ample opportunity of acquiring necessary skills.

The affirmation by the international labour organization (ILO) it was observed that technical training involve all activities which are aimed at providing skills, knowledge and attitude required for employment in a particular occupation or function in any field of economic activities such as industries agriculture, public and private service in an industrial setup, the technical subject based on the understanding of principle of the job taking initiative when confronted with problems related to his work ,supervising other skilled workers including craftsman and artisan in terms of attitude, skill and knowledge. Eze (1979) stated that industrial development has its origin in England in 19th century when children were employed in factories were required to attend a high level of skill. 1964, the industrial training was enacted to ensure adequate supply of trained personnel at all levels of industry, and to ensure that the cost training is shared by all those that benefit from it. The linkage programme between the artisan and industries also ensure the transition of persons in welding craft practice to the world of work opportunities to apply knowledge in real work situation, therefore bridging the gap between theory and practice. These will also improve the technical skill acquisition in welding practice among artisan in Minna Metropolis which can not be over emphasized hence this study is generally believed that the acquisition of practical skills is a means of increasing the productivity power of a nation. The Nigerian society should recognize the fact that every citizen should be equipped to contribute effectively to the development of a nation to achieve. This is only when an individual produce to the limit of his capacity.

According to hull (1972), skill is define as a normal dexterity through the representative performance capability in the most economic way. The amount of skill required depends on the training and level of development. Perhaps, this is why many Nigerian Youth are seen particularly in the cities and towns engaged in different trades and services the bulk of people

contribute what may be called the informal sector, most of them are engage in welding and fabrication , carpentry and joinery , vehicle body building, motor mechanic work block laying and concreting etc.

Approach to Improvement of the performance of master craftsmen in Minna Metropolis.

No nation that looks forward to industrialization will ignore the acquisition of technical skill of her citizen. Technical skill acquisition in welding practice has been facing poor funding while trying to achieve it's goals. Apart from the banking sector the government of Nigeria has from time to time set-up special schemes to assist especially small-scale entrepreneurs in terms of funding some of the schemes that are worthy of note. The Directorate was set-up in 1986 as one of the schemes under the Structural Adjustment Programme (SAP). It was set-up to fight the growing graduate unemployment situation in the country. It provides loans to graduates and other young entrepreneurs to set-up small-scale enterprises, thereby creating employment. The president in his 1997 Budget speech directed the newly created NDE(National Directorate of Employment)to concentrate its efforts on the reactivation of public works, promotion of direct labour, organization of artisans into cooperatives, promotion of self employment and encouragement of the culture of maintenance and repairs. The unique assignment of NDE (National Directorate of Employment)therefore was the creation of employment with emphasis on self reliance and entrepreneurship (Danwanzam and Mafwalai 1997).

Under the NDE (National Directorate of Employment)., small scale industries and Graduate Employment programme an applicant is required to submit a comprehensive feasibility report of the intended business, the amount of loan needed , names and addresses of two guarantors and

his or her own curriculum vitae. The applicants feasibility reports are then submitted to the banks for their secreting and approval. Successful applicants were given loans of ranging between N5000 and N35000 Participants are required to submit originals of their certificates and testimonials as collaterals. For loans N55000 to N100,000 the bank also requires a personal guarantor. The loans are repaid over a 5-year period with an interest rate of 13% and varying periods of moratorium.

The National Economic reconstruction Fund (N.E.R FUND) was established in 1989 to provide easy access to loans especially for small and medium scale enterprises. These loans are to be administered through participating commercial and merchant banks on favourable terms, the fund managers the loan on behalf of the Federal Government. According to Opara, the over N5 billion resources available to N.E.R.FUND for small and medium enterprises are comprised of loans borrowed from the world, \$230 million export stimulation loan from the African Development Bank (ADB), \$50 million credit from the Government of Czechoslovakia and N300 million from the Federal Government of Nigeria. N.E.R FUND gives financial assistance both in local and foreign currencies to deserving small and medium enterprises engaged in real production.

Small-scale enterprises (SME) loan scheme.

The Federal Government established the small and Medium Scale Enterprises (SME) loan scheme in 1989. Its major objectives include the following (Nwoye 2008):

1. To support programmes of assistance to small and medium scale enterprises.

2. To help small and medium scale entrepreneurs become more competitive by engaging in the rehabilitation and expansion of existing enterprises and also encourage the establishment of new ones.
3. To revive production and improve performance of viable enterprises which are being weighed down by financial constraints.
4. To promote long term financing through equipment leasing.

According to Niger State Ministry of Youth (2003), Government entered into agreement with Non-governmental Organization (NGO) to help in training some Nigerians for middle level manpower. In practice, although many governments welcome communities financing as a way to supplement their own resources , rarely are they prepared to tolerate the ideas if not so, I will suggest personally that ,since most of these artisans are managed by professionals they should explore other avenue for generating funds which will be part of improving practical skill acquisition to standardize the skill.

If all these are provided, I know the problems of funding will be curtailed and the room for improvement will be expanded.

Manual dexterity is of keen importance to the craftsman, but gaining experience is key to a craftsman's success and survival. One way that a craftsman can gain experience is by working as an apprentice to a more skilled and established craftsman. There are programs that can assist those seeking apprenticeships in the trade. A master craftsman program might be of particular interest to craftsmen interested in entrepreneurship and learning trades from the inside out. Also, it is important for the master craftsman to a statement of instructional intent which called “task”,

which describes the specific action to be demonstrated and the standard of acceptance performance which must be exhibited and describes the condition under which the task is to be performed. While the majority of craftsmen will learn and develop their skills on the job, it is common for most to have at least a high school education. Options exist in community colleges, vocational schools and even higher education institutions for advanced learning. For instance, courses in metalwork technology, blueprint reading, production management and furniture manufacturing can help a craftsman gain skill and insight into the trade or eventually assist them in advancing into supervisory and managerial roles. Craftsmen are skilled and adept trade workers that use hand tools, power tools and automated machinery in their daily work. They may spend years perfecting their craft and can be a jack-of-all-trades or highly specialized in their knowledge and abilities. A craftsman may produce anything from furniture to bedsprings to auto parts depending on their skill set.

Craftsmen need to be dexterous as many facets of their jobs require precision. They might be highly creative when developing a custom idea, or they may need to follow a specific set of blueprints when using a machine. If a craftsman has a computerized numerical control (CNC) machining skill set, then at least a basic understanding of computers is essential.

Craftsmen work with different types of woods, metals, plastics and glass. This variety of materials can require the use of multiple types of equipment on the job. The various equipment that a craftsman might use include: Drill presses ,Hand or power saws ,Grinders Staple, glue and caulking guns ,Lathes ,Milling machines ,Heat processing equipment.(Padlock B. and Galvin S.2000).

It is well understood that any attempt to work without the right set of tools and equipments, the job will fail or in other words fall below the expected standard. If there is an inadequacy or Lack of proper tools on the part of the artisan during the fabrication process, the whole fabrication will result to poor performance. Inadequate tools and equipments are among the major factors that are interrupting and militating against the improvement of the performance of the master craftsmen. The major reason why the difference between the job fabricated by our local master craftsmen and their foreign counterpart is so glaring is because their foreign counterparts have more advanced and more sophisticated tools than our local master craftsmen. Many cutting, jointing and measuring procedures that are carried-out manually by our local master craftsmen are been computerized and numerically controlled by an operator in a foreign workshop, that automatically makes their work or fabrication more advanced and more accurate than using manual procedures. From the above write-up one can see the need why an Artisan's Workshops must be equipped with the right set of tools and equipment to facilitate the improvement of the performance of master craftsmen. .(Padlock B. and Galvin S.2000).

Summary of the Literature Review

In the summary of the literature Review, we observed that Welding touches virtually all construction, manufacturing, and repair work. Welding is used to build projects such as aircraft, tanks, satellites, weapons, machinery, heavy equipment, trucks, helicopters, trains, power generation units, ships, etc. Some typical projects for construction welders include bridges, power plants, airports, prisons, breweries, refineries, aqueducts, dams, hi-ways, shopping malls, railroads, and gas, oil, and water piping systems. Welders will also be involved in the maintenance, repair, and modification of these projects.

It was also noted that the act of welding and fabrication started as early as the 19th century, the earliest examples of welding were welded gold boxes belonging to the Bronze Age, the Egyptians also learnt the art of welding. Several of their iron tools were made by welding. During the Middle Ages, a set of specialized workmen called blacksmiths came to the fore. Blacksmiths of the Middle Ages welded various types of iron tools by hammering them together. The welding methods remained more or less unchanged until the dawn of the 19th century.

Before automatic welding was first introduced in 1920 (Invented by P.O. Nobel), use of open flames (acetylene) was an important milestone in the history of welding since open flames allowed the manufacture of intricate metal tools and equipments. Englishman Edmund Davy discovered acetylene in 1836 and acetylene was soon utilized by the welding industry. In 1800, Sir Humphrey Davy invented a battery operated tool which could produce an arc between carbon electrodes. This tool was extensively used in welding metals and the CO₂ welding process popularized by Lyubavskii and Novoshilov in 1953 became a welding process of choice for welding steels, as it was comparatively economical. Soon, electrode wires of smaller diameter were launched. This made welding of thin materials more convenient.

Automatic welding integrated the use of arc voltage and bare electrode wires. It was used for repairing and molding metals. Several types of electrodes were also developed during this decade. Now presently the major types of welding are arc welding, gas welding, stud welding, soldering and so on.

The linkage programme between Artisans in Minna Metropolis and industries to improve practical skill acquisition was looked into and it was observed that , According to hull (1972),

skill is define as a normal dexterity through the representative performance capability in the most economic way. The amount of skill required depends on the training and level of development. Perhaps, this is why many Nigerian Youth are seen particularly in the cities and towns engaged in different trades and services the bulk of people contribute what may be called the informal sector, most of them are engage in welding and fabrication , carpentry and joinery , vehicle body building, motor mechanic work block laying and concreting etc.

The approach to Improvement of the performance of master craftsmen in Minna Metropolis, was discussed under the following: adequacy of funds , bridging the skill gap through re-training and adequacy of tools and equipments. These Research work will help emphasize on the point that, ‘No nation that looks forward to industrialization will ignore the acquisition of technical skill of her citizen’. Technical skill acquisition in welding practice has been facing poor funding while trying to achieve it’s goals. Apart from the banking sector the government of Nigeria has from time to time set-up special schemes to assist especially small-scale entrepreneurs in terms of funding some of the schemes that are worthy of note.

CHAPTER III

METHODOLOGY

This chapter describes the design of study, area of the study, target population and sample, instrument for data collection , validation of instrument , Administration of the instrument method of data analysis and decision rule.

Design of Study

The study is a survey research, where a survey is an investigation of the opinions, behavior, etc. of a particular group of people which is usually done by asking them questions(Ania O.C.1991). Respondents answered to the Mechanism for improving the performance of master craftsmen for effective welding activities in Niger state.

Area of the Study

This study is conducted in Minna metropolis to cover all road-side welders and personnel from Dana Pharmaceutical on the Mechanism for improving the performance of master craftsmen for effective welding activities in Niger state.

Population of the Study

The population of the study was selected from Chanchaga local government area tunga were 76 road-side welders that are using gas and are welding machines in Minna Metropolis were selected only and 8 industrial personnel from Dana Pharmaceutical in Maintenance Department.

Sample of Study

Random sample was used to detect, therefore a total number of seventy six (76) welders were selected and only eight (8) industrial personnel from Dana Pharmaceutical making the total of 84 respondents in all selected from chanchaga local government area tunga.

Instrument for Data Collection

The instrument used is the questionnaire, which was designed for welders and industrial personnel. It consists of 28 items for artisan welders and industrial personnel.

This instrument is divided into 4 sections of A, B, C and D.

Section 'A' deals with the respondent's personal data.

Section 'B' contains 10 items that deal with strategies adapted to standardizing the workshop of welding and fabrication among artisan in minna metropolis.

Section 'C' contains (7) refers to the adequacy of tools and equipment used by the artisan in Minna.

Section 'D' deals with 11 items of teaching activities to be used to improve practical acquisition of welding and fabrication in Minna.

It contained four (4) items on four point type sale:

- | | | | |
|----------------------|-----|---|----------|
| 1. Strongly agreed | S.A | = | 4 points |
| 2. Agree | A | = | 3 points |
| 3. Disagree | D | = | 2 points |
| 4. Strongly disagree | S.D | = | 1 point |

Validation of the Instrument

It is important to validate the instrument for data collection to ensure that it is measuring what it is designed to measure. So every data collected from chapter one to these chapter was first submitted to my supervisor for reading and approval before it was accepted to be included in these research work. Therefore, the instrument for collecting data of the study was validated after careful analysis by the supervisor and two lecturers in ITE Department before it was typed and administered.

Administration of the Instrument

A letter of introduction was attached to the instrument stating the purpose of the study. A copy of this letter was presented to individual artisan (welder) and industrial personnel by me and a few colleagues who helped me to cover the 84 people in a day, the questionnaires distributed were collected a day after it was completed.

Method of Data Analysis

This data for the study were analyzed using mean and standard deviation. The mean of the response was used to ascertain the central tendency of the respondent's opinion to decide on the item and answer to the four questions as being agreed or disagreed.

The standard deviation was used to determine the measure of variability of the responses.

The area was analyzed by using the formulae below:

$$X = \sum \frac{x}{n}$$

Where:

Σ = sum

X = normal value points

x = mean

N = number of item

The mean value therefore is:

$$= \frac{4 + 3 + 2 + 1}{4}$$

$$= \frac{10}{4}$$

$$= 2.5$$

The mean score of each item was computed by multiplying the frequency of each response made with appropriate normal value divided by the sum obtained under each item with the number of respondents to an item.

Σ = sum of normal value

F = frequency of the respondent under each move

n = number of respondents to an item

Standard Deviation

The standard deviation for each of the respondents was computed using the formulae below:

$$SD = \frac{\sqrt{x - x^2}}{N}$$

Where:

N = total number of items

x = mean of all the items

Σ = sum

$$\text{Standard Deviation, SD} = \frac{\sqrt{x - x^2}}{N}$$

Where all parameters mean (i.e. 2 above)

T = test formula used for testing hypothesis

T = $X_1 - X_2$

$$\frac{\sqrt{(N_1 - 1)S_1^2 + (N - 1)S_2^2}}{N_1 + N_2 \sigma^2 (1/N_1 + 1/N_2)}$$

Where:

X	=	mean score of industrial personnel
X2	=	mean score of technical (artisan) welders
S1	=	standard deviation of industrial personnel
S2	=	standard deviation of artisan welders
N1	=	total population of industrial personnel
N2	=	total population artisan welders
$N1 + N2 - 2$	=	degree of freedom (df)

Decision Rule

In order to interpret and draw conclusion on the findings of a study mean of 2.50 and above on the four points for acceptance while response with 2.49 and above was rejected. Also to test the hypothesis where the calculated t-value of the item was not significantly great or less than the critical or value, the null hypothesis was accepted. If otherwise, rejected.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

This chapter deals with the data collected for the purpose of answering the research question and testing of the hypotheses posed in the study. The findings were presented according to the research questions and hypotheses tested.

Research Question I

What are the strategies for standardizing the workshop of welding and fabrication among artisans in minna metropolis?

Table 1: shows mean responses of industrial personnel and welders on strategies for standardizing the workshop of welding and fabrication among artisans in minna metropolis.

N1=76 N2=8

S/No	Items	X ₁	X ₂	X _t	Remark
1.	There should be financial assistance to the welding industry for the development of the workshop.	3.15	3.16	3.15	Agreed
2.	There should be adequate power supply to operate the workshop effectively.	3.24	3.00	3.12	Agreed
3.	Personnel from industries should also participate in the workshop organization.	2.69	3.00	2.84	Agreed
4.	Enough safety aids should be provided in	2.97	3.00	2.98	Agreed

workshops.

S/No	Statement	X ₁	X ₂	X _t	Remark
6.	Regular supervisor by the government to ensure proper working place of the artisan welders.	2.90	2.83	2.89	Agreed
7.	Every workshop should be built according to the plan specified by the standard organization.	2.67	3.25	2.96	Agreed
8.	Artisans should be encouraged to participate in industrial attachment for the proper organization of the workshop.	2.55	3.16	2.86	Agreed
9.	All the workshops should be built outside metropolis.	1.92	2.30	2.11	Disagreed
10.	Workshop is to be constructed with enough reinforcement.	2.72	3.16	2.94	Agreed
Grand mean = 2.78					

Keys

X₁ = Welders

X₂ = Industrial personnel

X_t = Average mean = $\frac{X_1 + X_2}{2}$

X_t = Average grand mean

N₁ = 76

N₂ = 8

Table 1 revealed that both groups of respondents, welders and industrial personnel agreed with 9 items as the strategies for standardizing workshop of welding and fabrication of artisans in minna metropolis.

The two group of respondents however disagreed with item 9 with a mean of 2.11.

Research Question II

How adequate are the tools and equipments used by the artisan in minna metropolis? Mean score of respondents in relation to the adequacy of tools and equipments used by artisans in Minna metropolis.

Table 2: Is mean responses of industrial personnel and welders on the adequacy of tools and equipment used by artisans in minna metropolis.

		N1=76	N2=8			
S/No	Statement	X ₁	X ₂	X _t	Remark	
11.	Tools and equipments needed for effective practical work should be provided by the government to the artisan.	2.74	2.58	2.66	Agreed	
12.	Provisions should be made for constant maintenance of tools and equipments.	2.73	2.78	2.74	Agreed	
13.	Manuals should be provided to stimulate proper utilization of tools and equipments.	2.76	2.58	2.67	Agreed	
14.	Artisan welders should not operate without complete set of tools.	2.89	2.66	2.77	Agreed	
15.	Equipment and tools not available are usually	2.50	2.91	2.70	Agreed	

provided for the artisan to use by industries.

S/No	Statement	X ₁	X ₂	X _t	Remark
16.	Industrial personnel are allowed to facilitate artisan of welding and fabrication.	3.24	2.83	3.03	Agreed
17.	Tools should have proper grip for good safety.	3.14	2.91	3.03	Agreed

Table 2 shows the analysis of to respondents that is the elders and industrial personnel in relation to the adequacy of tools and equipment by the artisan in Minna Metropolis since the grand mean of both welders and industrial personnel were above 2.50 which is cut off points, it shows that both the respondents agreed that adequacy of tools and equipments used by the artisan in Minna Metropolis.

Research Question III

What are the basic teaching activities to be used to improve practical skill acquisition of welders and fabrication in Minna.

Mean score of respondents in the relation to the basic teaching activities to be used to improve practical acquisition of welding and fabrication in Minna.

Table 3: The basic teaching activities to be used to improve practical skill acquisition of welding and fabrication in Minna

S/No	Statement	X ₁	X ₂	X _t	Remark
18.	Teachers of welding craft practice should supervise in artisan work.	2.80	2.83	2.81	Agreed
19.	Demonstration method should be used in teaching of welding and fabrication.	2.51	2.91	2.71	Agreed
20.	Relationship between teachers and artisan should be cordial to improve practical acquisition.	2.83	2.91	2.87	Agreed
21.	Group discussion and active artisan participating is very improvement in teaching welding technology.	2.97	2.75	2.86	Agreed
22.	Project method should be employed in teaching welding technology.	2.66	2.68	2.67	Agreed
23.	Practical lesson should be accompanied by the group of facilities.	3.31	2.61	2.96	Agreed
24.	There should be team teaching between industrial personnel and artisan welders.	3.12	2.72	2.92	Agreed
25.	Organization of field trips to improve practical acquisition.	2.88	2.41	2.64	Agreed
26.	Special allowance should be paid to teachers for assisting artisan welders.	3.11	2.90	3.00	Agreed
27.	Practice after each lesson of assignment should be given to the artisans welding.	3.02	3.00	3.01	Agreed
28.	The teachers should teach safety precaution before any other things.	3.08	3.01	3.04	Agreed

Table 3 shows the responses welders and fabrication the basic teaching activity to be used to improve practical acquisition of welding and fabrication in Minna.

It also indicates that all the items 18 – 28 which means score of 2.50 and above are considered as agreed.

Hypothesis one

There will be no significant difference between the mean responses of Industrial personnel and welders on the Strategies for standardizing the workshop of welding and fabrication among artisan in Minna metropolis

Table 4: Shows mean scores and standard deviation of industrial personnel for the Mechanism for improving the performance of master craftsmen for effective welding activities in Niger state.

Group	Status	Number	X	SD
Group 1	Welders	76	2.78	0.411
Group 2	Industrial personnel	8	3.01	0.315

Calculated $t = 0.3251$, i.e. from hypothesis of welders and industrial personnel.

$N = 84$, i.e. total number of both welders and industrial personnel

$df = 82$, i.e. degree of freedom ($N_1 + N_2 - 2$)

Table value (1.78)

In the table 4, calculated t-value (0.3251) less than critical value (1.78). Necessary for rejection of the null hypothesis at 0.05 level of significance for 72 degree of freedom, the hypothesis is accepted. Hence there is no significant difference between the mean responses of welders and industrial personnel on strategies for standardizing the workshop of welding and fabrication among artisans in inminna metropolis.

Hypothesis two

There is no significant difference between the mean responses of industrial personnel and welders regarding adequacy of tools and equipments used by artisans in Minna Metropolis.

Table 5: t-test analysis of industrial personnel and welders .

Group	Status	Number	X	SD
Group 1	Welders	76	2.86	0.4106
Group 2	Industrial personnel	8	2.75	0.2408

Calculated $t = 0.03162$, i.e. from hypothesis 2

$N = 84$ Total number of both welders and industrial personnel

$df = (N1 + N2 - 2) = 82$ i.e. degree of freedom

Table value (1.78)

In table 5, calculated t-value (0.03162) is less than the t-critical value (1.78) necessary for rejection of the number at (0.05) level for significance for 82 degree of freedom, the hypothesis is accepted, hence, there is no significant difference between the mean responses of the industrial personnel and welders adequacy of tools and equipment in Minna metropolis.

Findings of the Study

This section shows the summary of the findings of the study. The hypothesis was postulated for the study as well as the research questions served as a framework for presenting the findings:

1. Findings related to the strategies for standardizing the workshop of welding and fabrication among artisans in minna metropolis in Niger state. The respondents for this study accepted that the under listed strategies should be adopted to promote standardizing the workshop of welding and fabrication.
 - a. There should be adequate power supply to operate the workshop effectively.
 - b. Every workshop should be built according to the plan specified by standard organization.
 - c. There should be financial assistance to the welding industry for development of standard of performance deemed appropriate for successful completion of task.
 - d. There should be a correct performance guide, to direct the procedures to follow till the job is finished.
 - e. Personnel from industries should also participate in the workshop organization.

2. Findings related to adequacy of tools, equipment and proper utilization.
 - a. Tools and equipment needed for effective practical work should be provided by the government to the artisan.
 - b. Industrial personnel are allowed to facilitate artisan of welding and fabrication.

- c. Tools should have grip for good safety.
 - d. Provision should be made for constant maintenance of tools and equipments.
3. Findings on the basic teaching activities to be used to improve practical acquisition of welding and fabrication in Minna. The respondents for this study agreed that the following approaches should be used for the improvement of teaching activities to promote practical acquisition of welding and fabrication in Minna.
- a. Teachers of welding craft practice should be supervised.
 - b. Demonstrating method should be used in teaching of welding and fabrication.
 - c. Relationship between teachers and artisan should be cordial to improve practical acquisition.
 - d. Organization of field trips to improve practical acquisition.

Discussion of the Findings

The discussion of findings for this study were organized and presented in line with the research questions, which served as framework for presentation.

The Mechanism for improving the performance of master craftsmen for effective welding activities in Niger state. It was observed that the major problems militating against the in improvement of the performance of master craftsmen were; Standard of performance deemed

appropriate for successful completion of task, requirements of a good master craftsman, Lack of Power (PHCN), Access to finance and Lack of Performance guide .An aspiring master would have to pass through the career chain from apprentice to journeyman before he could be elected to become a master craftsman. He would then have to produce a sum of money and a masterpiece before he could actually join the guild. If the masterpiece was not accepted by the masters, he was not allowed to join the guild, possibly remaining a journeyman for the rest of his life. Originally, holders of the academic degree of "Master of Arts" were also considered, in the Medieval universities, as master craftsmen in their own academic field. So, for the craftsman to attain the standard of performance deemed appropriate for successful completion of task, he must have been properly trained and should be an academic degree holder and also must have passed through the career chain, from apprentice to journeyman before he could be elected to become a master craftsman or crafts woman, and these is one area that is seriously been affected. Most self proclaimed master craftsman lack this basic training in Niger state.

Manual dexterity is of keen importance to the craftsman, but gaining experience is key to a craftsman's success and survival. One way that a craftsman can gain experience is by working as an apprentice to a more skilled and established craftsman. There are programs that can assist those seeking apprenticeships in the trade. A master craftsman program might be of particular interest to craftsmen interested in entrepreneurship and learning trades from the inside out. Also, it is important for the master craftsman to stick to a statement of instructional intent which is called "task", which describes the specific action to be demonstrated and the standard of acceptance performance which must be exhibited and describes the condition under which the task is to be performed.

PHCN which means Power Holding Company of Nigeria. Has indeed been holding the power to themselves, causing power outage and making people depend on fuel or diesel powered generators which are now quiet difficult to maintain due to the Government's removal of subside on all petroleum products. Now to remain in business or to establish one, you will need to have a fuel or diesel powered generator which will incur an extra expenditure minis the working capital needed to run the business and this is a very serious problem for both new and old people in the business because the equipments used in a welders workshop are heavy duty machines which require a lot of current to power them, meaning a heavy duty generator and a lot of fuel is required and that will cost a lot to achieve.

Access to finance: No nation that looks forward to industrialization will ignore the acquisition of technical skill of her citizen. Technical skill acquisition in welding practice has been facing poor funding while trying to achieve it's goals. Even a very good crafts with a lot of ideas will need money to establish his self in the trade, so access to finance is a serious problem. Another pressing challenge in improving the performance of master craftsmen is the skill gap and training need. Lack of sufficient funds to carry-out a good master piece and no advanced re-training programme to improve already acquired skills. Based on the foregoing therefore, this study is designed to find out the mechanism for improving the performance of master craftsmen in Niger state.

The factors that limited against the standardizing workshop include: Government, Politics, Individual craftsmen.

The adequacy of tools, equipments and proper utilization by the artisans in Minna. The result obtained in the research question 2 shows that all 7 items were agreed based on their mean scores. This shows that tools, equipments and proper utilization will produce adequate job in Minna metropolis. The result obtained in this research question 3 shows that all the respondents agreed based on the mean scores, and that teaching activities should be used to improve practical skill acquisition of welding and fabrication in Minna. The teaching activities used to improve practical acquisition of welding and fabrication in Minna.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with summary, the implication of the study and conclusion based on the findings in the study, there are recommendations and suggestions for further research.

Summary of the Study

Despite that, artisans are operating on their own there are still inadequate materials in welding and fabrication workshop in Minna metropolis. The literature review provides enough evidence that several factors were responsible for the poor standardizing practice of welding and fabrication.

Technical skill acquisition in welding technology needs adequate improvement through the supply of dependable consumables and non-consumable materials for training of artisans in welding technology trade. Teaching activities in welding and fabrication should be restricted to meet the student linkage program between welders in Minna and industrial personnel, and to be encouraged for other strategies that will be employed for the improvement of practical skill acquisition in welding and fabrication technology. Chapter one dealt with the background of the study ,statement of the problem, purpose of the study ,significance and research questions with the hypotheses. The area the research cover was all road-side welders and personnel from Dana Pharmaceutical on the Mechanism for improving the performance of master craftsmen for effective welding activities in Niger state. The population of the study was selected from Chanchaga local government area tunga were 76 road-side welders that are using gas and are welding machines in Minna Metropolis were selected only and 8 industrial personnel from Dana Pharmaceutical in Maintenance Department.

The survey approach was guarded and the instrument validated by the supervisor before it was typed and administered. Welders and industrial personnel were the people identified as the population for the study. The instrument administered by the researchers in all welding workshops and a company of Dana Pharmaceutical were located in Minna.

The instruments were analyzed using frequency count, mean score, standard deviation and t-test. The three (3) research questions were answered and three hypotheses were tested in respect of each question. The findings from that analysis from the studies were presented as follows:

1. 9 out of 10 items on the strategies used to standardize the workshop of welding and fabrication in Minna metropolis were perceived by the respondents as appropriate.
2. All the 7 items provided for the adequacy of tools, equipments and proper utilization by the artisans in Minna metropolis were accepted at varying degrees of importance.
3. Also, all the 11 items on the basic teaching activity to be used to improve practical acquisition of welding and fabrication in Minna were also accepted.

Table 4, 5 and 6 give a summary of t-test calculations, which reveal that there were no significant differences in the view of the respondents with regard to hypothesis 1, 2 and 3. Therefore, both hypotheses were accepted at ($P < 0.06$) level of difference.

Implication of the Study

The findings of this study have implications on the practical acquisition in welding technology, construction companies on welders. The findings on the basic teaching activities to be used to improve practical acquisition shows that adequate practical activities should be encouraged so that it can fit into the world of work after graduation.

Another thought implication is that, if there is no adequate of tools and equipments, welder would not work effectively. Inadequacy of tools and equipments, make welders not to know how to handle their tools, therefore, they may not be employed by industries.

Conclusion

Based on the findings of the study, it is analyzed that there is need for a change in the method of teaching the standard of welding and fabrication, there should be some special training programmes organized from time to time to help bridge the skill-gap between our local master craftsmen and foreign counterparts , the government should try as hard possible to provide these welders with adequate power supply to help facilitate their work . Industries and governments should also be involved in the improvement of the performance of master craftsmen for effective welding , and standardizing the practice of welding and fabrication. The most serious findings of the study with regard to Mechanism for improving the performance of master craftsmen for effective welding activities in Niger state is in the area access to funds. Communities and government should help in funding the artisan welders in Minna.

Recommendations

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

- a. There should be adequate power supply to operate the workshop effectively.
- b. Every workshop should be built according to the plan specified by standard organization.
- c. There should be financial assistance to the welding industry for development of standard of performance deemed appropriate for successful completion of task.
- d. There should be a correct performance guide, to direct the procedures to follow till the job is finished.
- e. Personnel from industries should also participate in the workshop organization.

Findings related to adequacy of tools, equipment and proper utilization.

- f. Tools and equipment needed for effective practical work should be provided by the government to the artisan.
- g. Industrial personnel are allowed to facilitate artisan of welding and fabrication.
- h. Tools should have grip for good safety.
- i. Provision should be made for constant maintenance of tools and equipments.

Findings on the basic teaching activities to be used to improve practical acquisition of welding and fabrication in Minna. The respondents for this study agreed that the

following approaches should be used for the improvement of teaching activities to promote practical acquisition of welding and fabrication in Minna.

- k. Teachers of welding craft practice should be supervised.
- l. Demonstrating method should be used in teaching of welding and fabrication.
- m. Relationship between teachers and artisan should be cordial to improve practical acquisition.

Organization of field trips to improve practical acquisition

Suggestions for Further Research

1. Strategies for standardizing the workshop of welding and fabrication among artisans in Minna metropolis.
2. Skills acquisition programmes as a strategy to combating unemployment in Niger state.
3. Evaluation of metalwork technology programme in college of Education in Minna Niger state.
4. The benefit of Technical and Vocational Education in Nigeria.

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