UNIVERSITY OF EDUCATION, WINNEBA

COLLEGE OF TECHNOLOGY EDUCATION, KUMASI

EVALUATING THE PRACTICAL COMPETENCY OF ARC WELDERS TRAINED UNDER FORMAL AND INFORMAL APPRENTICESHIP MODULE IN THE KETU SOUTH MUNICIPAL AREA OF VOLTA REGION

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A dissertation in the department of **MECHANICAL TECHNOLOGY EDUCATION,** Faculty of **TECHNICAL EDUCATION**, submitted to the School of Graduate Studies, University of Education, Winneba in partial fulfillment of the requirements for the ward of Master of Technology (Mechanical) degree

SEPTEMBER, 2016

DECLARATION

STUDENT'S DECLARATION

I, **Desmond Foli Amusu**, declare that the Dissertation, with the exception of quotations and references contained in the published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE……

DATE…….

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of Dissertation as laid down by the University of Education, Winneba.

NAME: **STEPHEN K. AMOAKOHENE**

SIGNATURE……

DATE……

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DEDICATION

This work is dedicated to the Almighty God for His unfailing love and preservation and to my dear father Mr. Joseph Amuzu, my mother Miss. Victory Tetteh, My sisters and brothers Rosemond, Rosemary, Nelly, Blandy, James Amuzu and Bright Zeta, Ankrah Abraham and to my King and Queens Lily, Selasy, Senam, Nayarm, and Sayram for their immeasurable prayers, support and enduring the stress with me through this study.

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ACRONYMS AND ABBREVIATIONS

BC	-	Before Christ
BS	-	British Standard
COTVET	-	Council for Technical, Vocational Education and Training
MSEs	-	Medium and Small Scale Enterprises
NGO	-	Non-Governmental Organization
OJT	-	On the Job Training
SPSS	-	Statistical Package for Social Science
TBM	-	Time Based Maintenance
TVET	-	Technical/Vocational Education and Training
UK	-	United Kingdom
UNESCO	-	United Nation Educational and Scientific Organization

ABSTRACT

Apprenticeship is a form of post-secondary training that teaches the skills and competencies necessary to perform tasks to an industry standard. Apprenticeship training provides the opportunity for hands-on learning under the direction of a certified journey person, with the ability to earn while you learn. Technical training can occur at both formal and informal sector. Once the apprentice has completed the required hours and/or modules for the trade, the apprentice can write a certification exam. This study was undertaken to evaluate the practical competency of arc welders trained under formal apprenticeship and informal apprenticeship module in the Ketu South Municipal Area of Volta Region. The study employed both qualitative and quantitative statistical procedure to analyze the data collected through questionnaires and interviewing of respondents. A total of one hundred (100) respondents were sampled for the study using purposive, stratified and quota sampling techniques.

The study revealed that the practical competency level of arc welders is going down even though the quality of training is good, respondents affirmed that various strategies must be put in place to improve the quality of training. Also, majority of workers employed by contractors do not have enough training time. The study recommended the need to invest more in technical education by government both in the formal and informal sectors to improve practical competency of apprentice since its emphasis can propel the country's technological development.

CHAPTER ONE

INTRODUCTION

This chapter presents the introductory part of the whole study which includes the background of the study, statement of the problem, purpose and objectives of study, significant of the study, research questions, delimitations of the study, limitation of the study and how the study is organized.

1.1 Background of the Study

Apprenticeship is a combination of on-the-job training and related classroom instruction under the supervision of a Journey-level craft person or trade professional in which workers learn the practical and theoretical aspects of a highly skilled occupation (Bilginsory, 2000).

Apprenticeship is a method in which trainees learn a craft or trade by hands-on experience while working with a skilled worker, usually under a written or implied indentureship agreement (Business Dictionary, 2015). Before the advent of formal vocational training in Ghana, there was traditional training where learners acquired skills from master craftsmen through observation and imitation.

Metal work involves practical skills which required a high degree of technicalities. These skills are usually acquired through a combination of study and practical experience. Metal work involves the following practices; welding, casting, brazing, soldering, particulate processing, forging, heat treatment, coating and deposition processes and sheet metalwork.

Apprenticeship in electric arc welding can be completed either within a formal training environment or within a practicing electrical arc welding more also the combination of both formal study and on the job training provides the best opportunity to gain technical skills and practical experience.

Apprenticeship is a partnership of employers, workers and a variety of schools and community colleges. Apprenticeship is an occupational skills training that combines on the job experience with classroom instruction. Apprenticeship is a proven way to train people for careers that demand a wide range of skills, knowledge and independent judgment, programmes combine progressively challenging tasks, learned and practical on-the-job with classroom training. The form of training where a trade is learned directly from a master craft man at a given period at time is classified as formal or informal.

Formal Apprenticeship is a structured form of training where a documented syllabus and time tables are used. The syllabus and the time table could be changed at any given time depending on the situation on the ground. There is a specified period of time for completion of this apprenticeship, which leads to the awarding of certificates.

Institutions that operate formal training modules continue to operate year after year without monitoring results and with qualitative expansion as their main strategic objective. Having guaranteed public subsidies, the incentive for change and relevance is weak. The major limitation to the effectiveness of public training institutions in their lack of administrative autonomy from central ministries and agencies.

Informed apprenticeship training model does not make use of syllabus or time table. The period of apprenticeship depends on the capability of the learner(s). Examples include family vocation, attached on-the-job training etc. (UNESCO Terminology, 2006).

According to Bas (1998), informed apprenticeship training takes place at ordinary work places in the informal sector and makes production tasks part of the instruction as means of acquiring technical skills. Apprentices learn the correction actions and procedures by observing and then assisting their master craftsmen who are their coaches in providing products services that are sold to customers.

Fluitman (1992) observes that informal apprenticeship training extends well beyond the acquisition of technical skills. The informal apprenticeship system has merits that cannot easily be achieved through formal training systems. Therefore it could be important to build on what already exists in the informal training system rather than to initiate a new training system.

According to Yambo (1992), in many developing countries, the resources of formal vocational training systems can serve only a small segment of the population and generally aimed at meeting the needs of formal sector business. For this reason informal apprenticeship training has received a great deal of attention as a viable alternative source of skills training (King and Laughlin, 1990).

According to Nosvik (2003), traditional apprenticeship in the informal sector is the main entry points for dropouts from schools. In traditional apprenticeships, the families or the apprentice bear the cost of training either by direct payment or through

reduced wages. This is the type of training while the apprentice processes from helper to skilled worker.

In casual interview, masters and apprentices often express the view that traditional apprenticeships are better alternative to vocational education at school. However, important shortcomings of traditional apprenticeship may include the partial transfer of knowledge from the master to the apprentice; large variations in the quality of the training provided; the perpetuation of existing lower productively technologies; and a tendency for slow innovation. Learning in traditional apprenticeship is generally passive and non-experimental. Masters tend to lack the appropriate pedagogical and apprentices are always subject to the risk of being employed as cheap labour for menial tasks.

In some countries like Egypt and Lebanon, NGOs play an intermediary role between Master and Apprentice by introducing training contracts. The programmes remain limited in scope and vulnerable to financial instability, lack of coordination with government initiatives limits the potential leverage of these initiatives.

According to Lingard and Holmes (2001) training is an effective control measure intended to target hazards at the source by changing behaviours and perceptions of the employees. Training people to enhance their performance at work is an essential component in the development of human resources and a valuable contribution to national development. Training and employment will be closely related in the sense that training as an instrument of development, will be irrelevant if it was not explicitly oriented towards the world of market.

International Labour Organization Working papers (2002) observe that training in developing countries has failed to make a positive impact as a result of designing programmes and conducting pupil-teacher style of instruction in classroom and ignoring and exposing the trainees to a real world of work. A field survey clearly revealed the gulf that still separates and MSEs economy from the formal national vocational training system. The first provide a great number of young people with employment in existing production and services activities while the second trains a minority of young people for occupations in administration and formal economy. Given this reality, there can be no doubt that the informal sector in the major stakeholder in the skills development at young people and adults on the African continent.

1.2 Statement of the Problem

The country's training system is marked by a complex mixture of formal and informal training with skilful tradesmen and women in several sectors. In Ghana, several agencies have been mandated to carry out TVET policies. Most TVET agencies are responsible for the training of helping people get skills which will help them to prevent poverty. Yet there is no policy to guide and structure the training that apprentices undertake during their skills training in both formal and informal sector (COTVET Newsletter, 2010).

In formal training, all training courses are held in state or private institutions and are regulated by state guidelines. Where in Non formal training it takes place without being subject to state guidelines and provides skills-upgrading for those who wish to extend their competencies. The current TVET curriculum is weak and nonflexible that

it does not meet the technological changes and diverse needs of different client. Due to poor instruction methods, inadequate training equipment and lack of meaningful work experience and poor supervision during attachment. Graduates of TVET programmes do experience technology shock when they finally enter the job market.

Historically, TVET has always been associated with those who have failed in academics who were considered weak in class back to the reign of governor Guggisberg in 1925 where among sixteen principles of education he outlined, one of the principles that stated the need for "the provision of trade schools with a technical and literary education that will fit young people to become skilled craftsmen and useful citizens" (Mac William 1971 pg 54).

Today the notion of TVET being the preserve of the less bright learners still holds and with the new development of the polytechnics being turned into Technical Universities, it is feared that the government policy may be confirming this attitude. It is in light of the above that the researcher seeks to evaluate the practical competency of electrical arc welders trained under formal apprenticeship module and that of those trained under informal apprenticeship module in the Ketu South of Volta Region.

1.3 Objectives of Study

The general objective of the study was to evaluate formal and informal apprenticeship training modules for the practical training of electrical arc welders and assess its impact on the development of the people in Ketu South Municipality. The specific objectives of the study were to:

- assess training needs of formal and informal electrical arc welding apprentices.
- ascertain quality training of formal and informal apprentice modules.
- establish effective training for formal and informal apprenticeship modules to enhance self employment.

1.4 Research Questions

The study employed some of the following research questions for investigating the problem.

1. What are the training needs of apprentices on the formal and informal apprenticeship training modules?
2. What are stakeholder's perceptions about the quality of training given to apprentices on the formal and informal apprenticeship training modules?
3. What strategies can be adopted to improve the effectiveness of training given to the apprentices on the formal and informal apprenticeship training modules?

1.5 Relevance of the Study

This study is important and worth the time and resources spent on it for a number of reasons. The study will help to:

- encourage educational administrators to structure apprenticeship training modules to attract more youth.
- serve as a guide for policy makers, contractors, government and the general public to employ competent workers in electrical arc welding which would go a long way to improve the quality of construction.

1.6 Definition of Terms

Apprenticeship: is a proven way to train people for careers that demand a wide range of skills, knowledge and independent judgment, programmes combine progressively challenging tasks, learned and practical on-the-job with classroom training.

Formal Apprenticeship: is a structured form of training where a documented syllabus and time tables are used.

Informed Apprenticeship: this is a training done outside the school system under a master craft man. It does not make use of syllabus.

1.7 Organization of the Study

The study is organized into six broad chapters and citation of references. Chapter one consists of introductory part which includes the background of the study, statement of the problem, purpose and objectives of study, significant of the study, research questions, delimitations of the study, limitation of the study and how the study is organized.

Chapter two examines a review of relevant literature on the study, this includes an overview of the history of apprenticeship training, the management and maintenance of training facilities in metal workshops (arc welding) the perception at the society towards apprenticeship programmes and a way to develop a thriving informal sector through vocational training.

Chapter three deals with the methodology to be adopted in carrying out the study, this comprises a description of the study area, research design, the target population, sample and sampling techniques, research instruments and data analyses procedure.

The presentation and analyses of the results will be the focus of chapter four, chapter fivetalks about the views of respondent on the apprenticeship training models and chapter six finally concludes the study with summary of the findings, conclusion, recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the relevant literature related to the subject matter of the study. These include: history of the apprenticeship training programmes; Consequences of the Industrial Revolution; Modern apprenticeship and vocational training; management and maintenance of training facilities in electrical arc welding garages and safe working condition; perception of the society towards apprenticeship training programmes; and overview of the informal sector through vocational training.

2.2 History of Apprenticeship Training Programmes

From the earliest times, in Egypt and Babylon, training in craft skills was organized to maintain an adequate number of craftsmen. The Code of Hammurabi of Babylon, which dates from the 18th century BC, required artisans to teach their crafts to the next generation. In Rome and other ancient societies, many craftsmen were slaves, but, in the later years of the Roman Empire, craftsmen began to organize into independent collegial intended to uphold the standards of their trades.

By the 13th century a similar practice had emerged in Western Europe in the form of craft guilds. Guild members supervised the product quality, methods of production, and work conditions for each occupational group in a town. The guilds were controlled by the master craftsmen, and the recruit entered the guild after completing his training as an apprentice a period that commonly lasted seven years. It was a system suited to domestic industry, with the master working in his own premises

alongside his assistants. This created something of an artificial family relationship, in that the articles of apprenticeship took the place of kinship.

As time went on, however, governments had to contend with the exclusionary practices of the guilds, whose members could monopolize their trades in each town. Powerful guilds, for example, could levy high fees against outsiders to prevent them from entering a trade. Even apprenticeships could be restricted, with preference given to the sons of guild members or the sons of wealthy acquaintances. Responding to these improprieties, the English government tried to define the conditions of apprenticeship with the Statute of Artificers of 1563, which attempted to limit exclusionary practices and to ensure adequate labour.

The notion of individual training extended beyond the craft guilds in the middle ages. For example, universities advanced the same principle with the master's degree, as did religious orders that required newcomers to pass through a novitiate. In medicine, the guild system applied to the surgeon, who also acted as barber and was regarded as a craftsman with less prestige than the physician. Lawyers served an apprenticeship by working in close association with a master of the profession (Encyclopedia Britannica, 2014).

According to Canadian Apprenticeship Forum (2012), apprenticeship is a form of post-secondary training that teaches the skills and competencies necessary to perform tasks to an industry standard. Apprenticeship training provides the opportunity for hands-on learning under the direction of a certified journeyperson, with the ability to earn while you learn. The training combines alternating periods of on-the-job (80 to

85%) and technical training (15 to 20%). Technical training can occur at a college, a union training centre, a private trainer or online. Once the apprentice has completed the required hours and/or modules for the trade, the apprentice can write a certification exam. Apprenticeship is regulated by the provinces and territories, creating 13 unique systems geared to the labour market needs and conditions in each region of Canada. The length of the training varies depending on the trade, but generally takes between 2 and 5 years. Most of the training is provided in the workplace. Normally, an apprentice works for 40 to 44 weeks a year and goes to school for a six-to-eight week "block" of training.

Nasvik, (2003) for centuries, the method of apprenticeship training was a master crafts person passing on the craft of a particular trade to an apprentice. The trades were treated as "secret knowledge" only to be passed on through organized and legal / bindings of the indentured apprentice. Up until the industrial revolution, politics did not play a significant role in the programme. The apprentice was usually indentured to the craft person for a period of ten years. The apprentice stayed in the home of the master craft man and work from house maid to apprentice, seven days a week, the only pay and reward was food, clothing a place to sleep and the knowledge to be acquired.

Hamilton (1990), states that in order to collect his indenture contract to the very last day missing a day of work could nullify one's apprenticeship. The indenture contract benefited the employer to a greater extent than the apprentice. Free labour, for a long period of time encouraged an employer to enlist an apprentice. This type of contractual apprenticeship functioned as a work based instruction up until the

industrial revolution. Today Technical Vocational Education and Training (TVET) is on the development agenda of many countries especially in Africa after years of neglect. The neglect of Technical and vocational education and training was instigated by a complex set of reasons that included budgetary constraints and criticisms of the World Bank in the early ninety's (1990s) on its direction and focus (www.tvet.gh).

The World Bank had argued at the time that the cost of technical and vocational education and training was too high compared with the returns to the economy, that the quality of training was poor and that there was considerable mismatch between training and the needs of industry. However since the beginning of the new millenniums, a fresh awareness of the critical role that TVET can play in economic and national development was drawn among policy makers in many African countries and within the international donor community. This is reflected in the various poverty reduction strategy papers that governments have developed in collaboration with the World Bank. In its poverty reduction strategy document, Cameroon for example intends to develop vocational and professional training to facilitate integration into the labour market, Côte d'Ivoire talks about strengthening vocational training (World bank Report, 1991). Ghana links vocational education and training with education of the youth and development of technical and entrepreneurial skills. Lesotho and Rwanda focus on linking TVET to business while Malawi emphasizes the need to promote self employment through skills development. One of the most important features of TVET is its orientation towards the world of work and the emphasis of the curriculum on the acquisition of employable skills. Another important characteristic of TVET is that it can be delivered at different level of sophistication. This means that TVET can respond not only to the needs of different types of industries, but also to

the different training needs of learners from different socio-economic and academic backgrounds, and prepare them for gainful employment in sustainable livelihoods (World Bank Report (TVET), 1991).

According to the 1997 UNESCO International Standard Classification of Education definition (1997), Education and Training is to "acquire the practical skills, know-how and understanding necessary for employment in a particular occupation, trade or group of occupation of trades". It is important to note that TVET is not only about knowing how to do things but also understanding why things are done in a particular way. The conceptual definition of TVET cut across educational level (post primary, secondary and even tertiary) and sectors (formal or school based, non-formal or enterprise-based and informal or traditional apprenticeship).

The nearly universal ineffectiveness of formal training systems when it comes to skills development in the informal economy is offset by the existence of forms of non formal or informal training that offer a majority of young people in developing countries their main, and sometimes only, means of acquiring occupational knowledge and know-how: the traditional apprenticeship schemes existing mainly in the sub-Saharan countries of West Africa, and the various forms of on-the job training or self training. Apprenticeship offers the only means acquiring the skills they need in order to meet the demand of industry and commerce. They are starting to be organized so that they entail periods of practical training alternated with classroom learning according to learning sequences that organizes apprentices' pace and modes of learning, on-the-job training and self-training. This type of training generally occurs in trades with no tradition of apprenticeship, notably commerce and

construction, as well as activities of a domestic or rural nature. On-the-job training (learning by doing, learning by repetition and imitation) is the most common way of acquiring skills in the informal sector. It goes without saying that this type of self-training takes place within economic, social and cultural environment where there is esteem for the transmission of existing skills, and continuity of techniques and tradition tasks, such is the extent to which they are part of a barely changing mentality. The only way to do so will be to incorporate resistance to cultural change as a key aspect of the vocational qualification sought. This brief look at existing ways and means of training in the informal sector shows the extent to which it continues to serve as a genuine medium for skills development among young people and adults, involving a type of production-based training that includes studying and doing. This skills development consists of acquiring not just technical competencies (knowing how to reproduce, copy and also improve an object), but also social competencies (alignment with a given occupational tradition, negotiating with clients) and general competencies (managing business profitably) (Agence Français de Development, 2007).

The field surveys identified numerous initiatives in the different countries to structure existing traditional apprenticeship systems and, when appropriate, redefine existing training systems in order to transform these apprenticeships into dual training schemes leading to qualifications. Some of these initiatives were taken by proponents of traditional apprenticeship. Others are the outcome of a partnership between these proponents, national authorities and donors. All are indicative of the extensive changes occurring in both the resources devoted to training and in the various types of training available (Agence Français de Development, 2007).

2.2.1 Consequences of the Industrial Revolution

The Industrial Revolution altered attitudes toward training. Machines created a need for both skilled workers (such as machinists or engineers) and unskilled workers. Unskilled employees who showed aptitude advanced to semiskilled jobs. Apprenticeships actually grew in importance with the development of trade unions, which were created to uphold quality and control recruitment (by protecting union jobs).

In England apprenticeship was maintained by the craft industries and even extended to analogous fields. The education system, for example, offered various apprentice programs for student teachers, and there was a comparable system of training for young farmers. Apprenticeship was fairly common in the American colonies, with indentured apprentices arriving from England in the 17th century. But apprenticeship in colonial America was less important than in Europe because of the high proportion of skilled workers in the colonies.

Because modernization and industrialization brought new impetus to the division of labour, the development of large-scale machine production increased the demand for workers with specialized skills. The more ambitious among them sought to increase their effectiveness and potential for advancement by voluntary study. To meet this need, mechanics' institutes were established, such as the one founded in London in 1823 by George Birkbeck, which still exists as Birkbeck College, and Cooper Union for the Advancement of Science and Art in New York City, established in 1859. In France technical education on a national scale dates from 1880 (Encyclopedia Britannica).

2.2.2 Modern apprenticeship and vocational training

Early in the 20th century, assembly-line methods expanded the number of unskilled or semiskilled jobs, which made the long period of apprenticeship for skilled occupations unattractive. This led many countries to devise labour programs that made skilled jobs more accessible to the general population.

Apprenticeship remained a necessary part of craft industries, in spite of the mechanization that initially increased the number of jobs not requiring formal instruction. After World War I a new pattern of recruitment emerged. Apprenticeship on traditional lines was maintained for skilled craftsmanship; for less-skilled work "learnership" became a common practice, providing the newcomer with opportunities to learn by working with others. Some industries introduced a system of upgrading, where labour and unskilled workers were allowed to undertake skilled work after having served as assistants to other skilled workers. These training methods were supplemented by two approaches: pupil apprenticeship, whereby the recruit learned working skills with the intention of qualifying for an advanced position in the industry; and student apprenticeship, which allowed those with a university education, technical education, or working experience to qualify for employment.

Like the medieval guilds, the emerging trade unions restricted entry to skilled trades by means of rigorous apprenticeship, but they also created opportunities for semiskilled workers to advance into skilled jobs. The formerly exclusive craft unions also began to change. From the 1920s they began to accept workers who had not entered as apprentices. As a result, the ratio of apprentices to journeymen ceased to be an issue.

The nature of apprenticeship changed greatly after World War II, with considerable variation between different countries. Perhaps the most radical changes took place in West Germany, which had the advantage of a practically new start. There a distinction was made between skilled trades needing apprentices, semiskilled trades needing trainees, and handicrafts that employed artisans. Trades were grouped under local chambers of industry, handicrafts under chambers of handicrafts. The apprentice registered a contract with the appropriate chamber and kept a workbook that was inspected from time to time. There were also tests at monthly or quarterly intervals. Part-time attendance at a vocational school, included in the hours of employment, was compulsory until age 18.

In France, vocational training came under the supervision of the Directorate of Technical and Vocational Education of the Ministry of Education. This created 24 national professional consultative commissions that represented employers, government, and trade unions. In 1930 the government began developing technical colleges to train a significant proportion of all skilled workers. Apprenticeship could be arranged by contract with a private employer, by attendance at school beyond the normal age of 16 (called the complementary course), or by apprenticeship to an artisan trade. For the final examinations, those at the colleges and schools were supervised by the directorate, while those for apprentices were supervised by the local chambers of crafts.

In Britain the Employment and Training Act of 1948 created a Central Youth Employment Executive and led to proposals for a National Joint Apprenticeship and Training Council to be set up in each industry. The printing trade, for example,

introduced selection by objective testing of suitability and aptitude, while the motor-vehicle-repair industry developed an apprenticeship scheme for a national craftsman's certificate. The Post Office Engineering Department, which never accepted the traditional pattern of apprenticeship, developed a three-year course for recruits. But the most significant break with the past was the module system in the engineering industry, which provided a year's training in a wide selection of skills, followed by selected training in specialized skills. These were accompanied by performance tests and appropriate further education.

In the United States conditions of apprenticeship have typically been more flexible than those in Europe. This type of training is overseen by the Bureau of Apprenticeship and Training, established within the U.S. Department of Labor in 1937. While the lowest age for entry into the workforce is 16, many trades require a high-school diploma, which makes the effective entry age 18. The training period varies from two to five years, with much of the training taking place at technical and vocational schools. A trainee typically advances after passing qualifying examinations, with pay (which can vary from 60 to 90 percent of the journeyman's rate) increasing at each phase. In effect, American apprentices are indentured to the industry rather than to an employer.

In Japan apprenticeship and employee training have often featured a personal orientation rarely found in other industrial nations. The unique Japanese concept of apprenticeship stems from a difference in the relationship between employer and employee. Although this arrangement does not hold for most small and medium-sized companies, large Japanese companies have had a social obligation to provide lifelong

work for employees who, in return, are required to continue with the same employer (until death or retirement)—no matter what the job assignment. Because Japanese apprenticeship emphasizes employment with a particular company, the close relationship between an apprentice and a specific trade, common elsewhere, is missing in Japan. . (Encyclopedia Britannica 2014)

2.3 Management and Maintenance of Training Facilities inElectrical Arc Welding Garages

Tools, equipment and machines supplied and facilities in workshops should be well managed and organized. According to Chudley (1984), the workshop demand facilities which are economically possible for any particular contract, this will promote good relationship between management and trainees and reduce the loss of materials as a result of theft, accidental mismanagement and vandalism. He further stressed that better the facilities and amenities provided; the greater will be the commitment of the instructors and trainees, which would ultimately lead to higher productivity. From the above quotation, it is clear that irreparable and uncontrollable loss of tools, occurrence of accidents and damage in workshops and firms may be due to mismanagement of the facilities.

According to the management guru Peter Drucker (2008), management is the organization and coordination of the activities of a business in order to achieve defined objectives. Management is often included as a factor of production along with, machines, materials, and money. The basic task of management includes both marketing and innovation. Practice of modern management originates from the 16th century study of low-efficiency and failures of certain enterprises, conducted by the

English statesman Sir Thomas More (1478-1535). Management consists of the interlocking functions of creating corporate policy and organizing, planning, controlling, and directing an organization's resources in order to achieve the objectives of that policy.

Management from the point of view of Sackey et al. (1994) is the act of directing human activities and by implication all staff and managers. He relates the managerial affairs to humanity since the staffs who are also managers by implication deal directly with trainees, workshop assistance and contractors. Therefore the most effective workshop management depends on the instructor's ability to organize, control, co-ordinate, communicate and lead shop management in respect to human and materials resources. A small mistake or mismanagement can bring irreparable ruin to the whole workshop hence prevention is better than cure. To ensure that your tools, equipment and machines work efficiently and have the longest possible life, a good programme of regular maintenance is essential (Sackey et al. 1994).

The training scheme in line with the principle of dual training, apprentices spend two-thirds of their time receiving hands-on training in a workshop under the supervision to an accredited master trainer, and the remaining one-third following theoretical courses in a public vocational training centre. Practical work experience in businesses is an integral part of the scheme and is covered by agreements signed between the State and business organizations. The different stages in the four-year apprenticeships are organized as follows:

- Three months to familiarize apprentices with the work environment;
- Three months instruction on health and safety issues;

- Six months in a workshop, with training on the use of tools and equipment;
- Three years hands-on training through involvement in production activities;

The number of training hours per day is limited to six in order to maintain family and peer group links. Training is assessed at regular intervals to detect and correct apprentices' knowledge and skills gaps. After a final assessment, apprentices receive a certificate recognized by all the actors involved. Apprentices who have completed their training and satisfy the academic requirements can sit for National Recognized Diploma such as the Vocational Skills. While the initiatives undertaken by professional organizations and donors have started to transform training practices on the ground, they have, above all, led some. BS 3811 defines maintenance as "The combination of all technical and associated administrative action intended to retain an item in, or restore it to a state in which it can perform its required function (BS 3811, 1984).

According to Ajiboye and Adedokun (2010), maintenance system is known as terotechnology, which is a total systems concept of maintenance. The British Standards, BS 3811 (1974), defines terotechnology as a combination of management, financial, engineering ,and other practices applied to physical assets in pursuit of economic life cycle costs or simply as a combination of any actions carried out to retain an item in, or restore it to, an acceptable condition.

The factories act 1961 at UK also defines maintenance as "To maintain in an efficient state, in efficient working order and in good repair". Maintenance according to Dhillon (2002), is work that is carried out to preserve an asset in order to enable its continued use and function, above a minimum acceptable level of performance, over

its design service life, without unforeseen renewal or major repair activities.. Types of maintenance are

- **Breakdown maintenance**

  It means that people waits until equipment fails and repair it. Such a thing cou the equipment failure does not significantly affect the operation or production significant loss other than repair cost.

- **Preventive maintenance (1951)**

  It is a daily maintenance (cleaning, inspection, oiling and re-tightening), design to retain the healthy condition of equipment and prevent failure through the prevention of deterioration, periodic inspection or equipment condition diagnosis, to measure deterioration. It is further divided into **periodic maintenance** and **predictive maintenance**. Just like human life is extended by preventive medicine, the equipment service life can be prolonged by doing preventive maintenance.

- **Periodic maintenance** (Time based maintenance - TBM)

  Time based maintenance consists of periodically inspecting, servicing and cleaning equipment and replacing parts to prevent sudden failure and process problems.

- **Predictive maintenance**

  This is a method in which the service life of important part is predicted based on inspection or diagnosis, in order to use the parts to the limit of their service life. Compared to periodic maintenance, predictive maintenance is condition based maintenance. It manages trend values, by measuring and analyzing data about deterioration and employs a surveillance system, designed to monitor conditions through an on-line system.

- **Corrective maintenance (1957)**

  It improves equipment and its components so that preventive maintenance can be carried out reliably. Equipment with design weakness must be redesigned to improve reliability or improving maintainability

- **Maintenance prevention (1960)**

  It indicates the design of a new equipment. Weakness of current machines are sufficiently studied (on site information leading to failure prevention, easier maintenance and prevents of defects, safety and ease of manufacturing) and are incorporated before commissioning a new equipment.

From the above information the researcher is of the view that the prime aim of maintenance is to preserve training facilities in their initial state as for as practicable, so that it serves it purpose effectively. The providers of training need to verify that equipment needed it in an excellent working condition and is appropriate for the task.

The process of making a safe worker is becoming more complex as our society becomes more technologically advanced. It is no longer possible to learn adequate safety habits on the job or at home, there must be some form of safety education. This responsibility is falling mainly to the trainers, where trainees can be taught safe work habits and practices at an earlier age and under closer supervision than once they are in the workplace. Safety instruction cannot be taught as a separate subject, but must be a vital part of all instruction, providing competencies necessary to safely operate machinery and equipment in a safe, orderly and efficient manner, strong (Hopp& Spearman, 2001). Instilling safe habits early on in a person's life can help them determine and indentify hazards more readily, thus being more likely to avoid serious injuries.

Delucy & Hayni, (2000) suggest using the system approach to safety. This approach recognizes that each component of a process affects the entire system. If one component fails, the entire system fails. Their components include environment, human factors, tools and equipment, processes materials, outside influences and feedback. Safety need to become automatic, that is, safe methods and procedures are explained and demonstrated, hazards are pointed out, and trainees are put to work on the machines and equipment. Their memory of the demonstration and careful, consistent monitoring help ensure proper safety habit and attitudes development. Safety must be valued above all else in the workshop, including craftsperson or technical expertise (Delucy & Haynie, 2000).

Management at the forefront of each decision related to the operations and their leadership approach should impact in each employee's. Their active and visible commitment can produce a positive influence on each employee thus strengthening a culture of awareness and acceptable practices. Occupational safety in workshops is becoming largely dependent on preparation and conformance to the appropriate, Technological procedures. These procedures are only effective if the system is designed and managed to ensure quality is not compromised. Different preventative measures can be adopted according to each unique workplace situation. Therefore it becomes the responsibility of management to ensure creative and nontraditional method of training employees are developed for continual and repeated campaigns to disseminate information (Lentz and Wenzl, 2006). Managements attitude towards safety are related in an employee's or trainees daily action. It is through these daily that activities move from concept to reality. While trainee's participation is a critical

element to the success of a safety system, it is also necessary to utilize appropriate technological controls to reduce exposure.

The likely hood for loss increases as when maintenance is not a primary concern to the organization. What is especially alarming is lack of growth in maintenance (preventive) in small firms (Lewondownski, 1997) workshop operators who chose to do nothing and accept the status quo as acceptable create poor risk perception to equipment in operation. Workshop operators may not view maintenance (Preventive) as a priority due to the relative infrequency of equipment and machines breakdown.

2.4 Effective Training Programmess

According to Mark Lamendola (1998) Competence and confidence is an ideal mixture in the workplace. Employees with these traits can motivate others to work together and create a safe and productive environment. He also says establishing an effective training program is the best way to start. However, building a strong and knowledgeable staff is not free. He gave out 10 tips that will help one to achieve effective training.

- **Use variety**

One has to use many training media and methods available: he gave an example, if a master technician tells a group of electricians some facts about troubleshooting a new motor drive, he will pass on some knowledge. But much more knowledge if the apprentices view a video on that drive, read the manual, watches another electrician working on it, or listens to a tape on how to troubleshoot it. The more ways the master apprentice present information, the more apprentices will learn and retain. He said the pace and style of training most vary. Formal training is good, but informal training

fills in many gaps. Magazines, books, and on-the-job training (OJT) are all very useful, even the master apprentice can bring the knowledge of many experts into one place.

- **Use repetition**

Informal training repetition can mean one distill portions of the training into slogans, factoids, and images. Including slips of paper in with paychecks with a sentence or two about some idea can work well with safety training. Photos, illustrations, or icons can be included to get ones point across. Even passing around a copy of a magazine article, maybe twice a year, can help employees remember important information. Refresher courses are also a form of formal training repetition. Recap previous sessions before continuing with new material.

- **Feedback**

Feedback reinforces learning by making the student recall information. The method of feedback is important. For example, master exams tend to intimidate people. Brief quizzes reinforce the learning experience, without intimidation. In fact, success on frequent quizzes will boost the student's confidence. Quizzes can be formal, informal, oral, or written. Using these tools in combination is best.

- **Administer small doses**

Most people get "burned out" if they get too much of a good thing-at least too much at one time. That's just the way most minds work. If an instructor is going to schedule a week of training, he will do better to spread all five topics, a little at a time, across five days, rather than covering a full topic each day. Administratively, this is a little more work, but the payback is much higher. Having a tip of the day is another easy way to administer small doses.

- **Apply knowledge right away**

It's too easy to forget something if you do not use it. Experts disagree on the "shelf life" of learning, but there is somewhat of a consensus you should wait no longer than two weeks to make use of newly acquired skills. Even if people did not forget, they are much more motivated when they know they can put their learning investment to use right away.

- **Make it interesting**

Personalize the training to make it interesting and add an interactive element whenever you can. Group projects and discussions help accomplish this objective Trainees are more interested when you're helping them solve their problems than when you are passing on information they do not have an immediate need for. Find that need.

- **Use training experts**

Several companies produce interesting training videos and other aids that use the principles of variety, repetition, and small doses. Who are the experts? Certainly, a company that makes motors knows about motors.

- **Use your vendors**

Vendors routinely put on mini-courses. While these may accent a particular product, it is worth it to pass on information an attendee can use. Many times, a vendor will come to the workplace. Many companies train their sales representatives. Trainees also learn more about the equipment and usually wind up on the short list for product update information; and the ball caps, screwdrivers, and pens vendors usually hand out at these mini-courses are always an added bonus.

- **Use a matrix**

Many engineers and financial types often use spreadsheets. If you do not have spreadsheet knowledge, ask for help. If you do not have a matrix, you are administering your training in a haphazard manner. This says something to the apprentices.

- **Give everyone a chance**

Every trainee must have the chance to contribute and have confidence in the job. Master apprentice must show the apprentices that they are all important, through the way administer training, and will have a positive effect on the team dynamic. When everyone is an expert in something, then he has accomplished one of the main goals of training: a strong, knowledgeable staff. The attitudes from such an environment give rise to teamwork as well as excellence. Kermit Burley, (1989) also talks about four characteristics of an effective training program that allows employees to learn best.

- **Learning Objectives**

According to Kermit Burley, (1989) effective training programs answer your employees' question of "Why am I taking this program?" The design of every training program must begin with learning objectives. Instructional designers need to create their programs with specific objectives that their trainees must accomplish. These objectives must also relate to actual skills that your employees need to be more successful at their jobs. Trainers must also mention these objectives at the beginning of every training module.

- **Involvement**

According to Kermit Burley, (1989) an effective characteristic of all good training programs is active involvement for all participants. Adults need to be a part of their

training, and a good training program has frequent exercises built into it. Practice sessions at the end of each training module are a good way to involve your trainees. Conduct role plays, games or small group problem-solving activities to make your students a part of their training. Vary activities from individual to small-group and large-group exercises so that every trainee has an opportunity to participate.

- **Opportunity to Share Experiences**

Adults bring a lot of experience to your training program. Effective training programs use this experience frequently and allow ample opportunity for everyone to share their experiences. Design your training program so that new concepts can be discussed and reviewed. Adults want to add these new skills to what they have experienced in the past and build on that knowledge. For true learning to take place, trainees need time to reflect on what they have just learned and then discover how to apply it back on the job (Kermit Burley, 1989).

- **Make it Fun**

Robert Pike, (1989) in his book "Creative Training Techniques Handbook," states that "Learning is directly proportional to the amount of fun you have." Effective training programs make learning fun as often as possible. Allow laughter into your learning, and design games and practice opportunities that create time for the participants to enjoy what they are doing. Creative and fun activities can be designed into your training programs, and your employees will remember and apply the training long after the workshop is complete (Kermit Burley, 1989).

2.5 Quality Training

According to Dan Bobinski, (2000)what makes for a quality training program? It is not the talent or experience of the trainer; it is not the comprehensiveness of the

training, nor even the innate talent of the people participating in the training. The key to having a quality training program of any kind is the desire within everyone concerned that the training be a success. It is really that simple. Unfortunately, "simple" can be rare.

Dan Bobinski, (2000) suggest five factors that contributes to good training.

- **A quality facilitator**

  Inmulti-media lives, a trainer needs more than just speaking skills. A trainer should have expert knowledge, be confident, be able to inspire, comfort, entertain, counsel, and even push back. A quality trainer makes people think. No longer can a trainer rest solely on his or her technical know-how.

- **Appropriate Training**

  Dan Bobinski, (2000) too often training is the "go to" solution for problems when the root causes of the problems will not be solved with training. So first, if you are conducting training to resolve a problem, make sure it's an appropriate solution for the problem.

- **A quality curriculum**

  Training should be designed and developed after asking several key questions: What are the expected results of the training? What behaviors are needed to achieve those results? What knowledge, skills, and attitudes are needed to affect the desired behaviors? From there, dozens of questions should be asked and learning objectives should be solidified. Then training can be developed into an engaging curriculum that enables learners to internalize, or "own" their learning.

- **Training location**

  Some training requires one-on-one, on-the-job efforts. Other training requires

lectures in large auditoriums. But most training falls somewhere in between those two. The best location for your training will be the most cost-effective location in which apprentice can learn what is needed, without interruption.

- **People should know why they are in training**

  Apprentice must know the reasons for the training and how it will help the organization reach its vision, mission, and goals.

2.6 Overview of the Informal Sector through Vocational Training

A comparison of the countries' respective situations helped to identify ten major factors or guidelines to ensure that vocational training in the informal sector has the means to increase the skills and qualification levels of employees and micro-entrepreneurs, and make a positive contribution to their working conditions and the profitability of their activities.

2.6.1 Introduce pre-vocational skills training schemes to avoid social and educational Waste

Many children leave school at the age of ten or twelve and have no chance of starting an apprenticeship before the age of fourteen. Some of them lose the few educational achievements they gained at school, either because they are on the streets or because they started to work too young. Others simply continue to work in a family or neighborhood activity and have no opportunity to progress to another field of work (World Bank Report, 2003). Giving them a chance to have pre-vocational skills training in order to maintain or strengthen their educational achievements and actively choose an occupation allows them to avoid the social ravages of the streets and

progress towards possible vocational qualifications (Agence Franccaise de Development, 2007).

2.6.2 Acknowledge the sector as a source of skills development in its own right.

Alongside the formal methods of training and acquiring qualifications, there is a whole range of ways and means of developing skills that are either not known to those responsible for existing formal training systems or under-valued in terms of the knowledge and know-how generated, and are consequently neither recognized nor validated: skills acquisition in the family, on-the-job training, through observation and imitation, and by means of traditional apprenticeship in the countries where this is well developed. These alternative routes, taken by the sector's workers, account for the training of up to 90% of a country's workforce. In terms of the results achieved, they often amount to being the countries' real training systems. The time has come for developing countries to acknowledge the true role played by the informal sector in training young people and adults and helping them inter the labour market. It is also time to recognize the content and levels of knowledge and skills thus acquired and to incorporate the best skills development schemes and practices into a comprehensive reform of existing systems (Agence Franccaise de Development, 2007).

2.6.3 Enhancing the structuring role of professional organizations in defining the demand for training

The analysis of positive changes and mutations in informal economy training schemes for apprentices, the self-employed and micro-entrepreneurs reveals the major role played by professional organizations in the sector. As national policies tend to develop training supplies that target formal enterprises only, these professional

organizations are, in the vast majority of cases, the only means of making the informal sector's skills needs heard and incorporating them into the reforms underway. They must, therefore, be supported so that these reforms can at least take into account the training and qualification demands among all economic stakeholders (Agence Franccaise de Development, 2007).

2.6.4 Giving young people a voice in the debate on job market access and activity creation

Meetings with numerous young people pinpointed and observation shared by all: societies dominated by the informal economy are incapable of finding young people decent jobs corresponding to their levels of education and training. Such societies consequently exclude the upcoming generation. Faced with this feeling of exclusion, young people have decided to react and take their rightful place in debates and proposals on how to change the economic and social situation, notably in the informal sector. Some initiatives aimed at organizing African youth, while they are too recent to be evaluated, have the merit of helping young people become full-fledged players in the economic, professional and civic life of their countries. (Agence Franccaise de Development, 2007)

2.6.5 Organize traditional apprenticeship practices slowly but surely.

Traditional apprenticeship is the most common form of youth training in most countries. Traditional forms of youth training in workshops are in fact the point of departure for the slow but far-reaching transformation of crafts apprenticeship into dual systems that combine on-the job and theoretical training. The changes taking place vary from country to country, but everywhere they entail the structuring of

established practices through the progressive introduction of interaction between practice and theory. The schemes to structure and progressively improve apprenticeship practices that involve all of the partners concerned are the best way to help young people vitalize their professional trajectories (Agence Franccaise de Development, 2007).

2.6.6 Providing resources to support employment and activity creation after training

The numerous national and international technical and financial partners working in the informal sector agree that training should not be an end in itself but must truly enable young people and adults to find appropriate jobs or activities. They have, therefore, often developed educational, material and financial resources to help create effective pathways from training to the world of work. These include support for the implementation of skills acquired (mentoring, post-training support, etc.), help for the start-up phase of an activity (for example through material contributions such as tool-boxes) and financial grants (such as access to microcredit) (Agence Franccaise de Development, 2007).

2.6.7 Training adults at the same time as young people

Current training efforts in the informal economy give priority to young people in apprenticeships and the numerous young people outside the education and training system who are seeking to earn a livelihood. However, this observation does not detract from the legitimacy of the request made by many groups of craft workers and micro-entrepreneurs met during this study to be able to access continuing training. Various continuing training schemes in different countries were identified however

people said that these are presently restricted to limited or privileged groups. But the improving quality of youth training cannot be separated from the often simultaneous literacy and skills development schemes for informal sector craft workers, employees(Agence Franccaise de Development, 2007).

2.6.8 Support efforts to make training effective by developing appropriate long term financing instruments

Various countries vocational training policies clearly reveals the disproportionate amount of funds spent on those in established training systems in comparison to those spent on people who find work through traditional apprenticeship or the various other informal routes to inclusion and skills development. This imbalance is contrary to the need for equity, which requires that the countries public authorities divide education and training resources fairly among all those who have a right to them. It also goes' against the principle of economic and social efficiency because the resources allocate to declining qualifications and occupations are not being used in areas that could create wealth and jobs. Informal sector training can only be effective and well-organised if public authorities bear in mind the major contribution that micro and small enterprises (MSEs) make to wealth and job creation, and review current budget allocations, and if training actions are based on mechanisms for levying and allocating resources that suit the ultimate goals and needs of the informal sector. Vocational training funds seem to be totally appropriate instruments for this purpose, if they are able to support MSE workers and are managed in partnership by all of the public and private stakeholders concerned.

2.6.9 Enabling the informal sector workers to become stakeholders in their own training and skills development

Most countries have introduced forms of training and skills development based on the experiences prove that informal sector stakeholders can take their futures into their own hand if they have the human, organizational, educational and financial support necessary to invest effectively in their own skills developments, and if such efforts are focused on activities and occupations that hold promise for the country's economy. They also show that training can more easily guarantee that skills acquisition leads to enterprise creation if it is promoted by peers who agree to share their experience and support those with whom they have pooled their knowledge and know-how.

2.6.10 Raise the education levels of all workers in the sector.

Firstly, the informal sector is by far the largest employer of poorly-educated and uneducated young people and adults. Secondly, the greater the number of years spent at school by the self-employed and entrepreneurs, the more the results of their activities will be positive and allow them to earn a decent living. The close link between under-education and informal sector employment and the causal relationship between education and profitability levels therefore advocate for improved universal education in developing countries. Universal education provides the foundation on which any major efforts to help people into the labour market can be built. When the foundations are unstable, it is hard to build the rest (Agence Franccaise de Development, 2007)

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter focuses on the methodologies used for the study. It dealt with the study area, research design, target population, sampling techniques and sample size, research instruments, methods of data collection and data analysis procedure. It mainly explains how the study was conducted, the applied methods and techniques use in the data collection, the reasons for which they were used according to the researcher's aims and objectives and also the statistical tools used to analysis the study. This chapter also helps to establish facts in the study and make the research authentic.

3.2 Study Area

The study was conducted in the Ketu South Municipality and covered the following areas: Aflao, Avoeme, Avakoma, Viepe, Denu, and Adafienu where thirty (30) small scale electrical arc welding garage shops were covered.

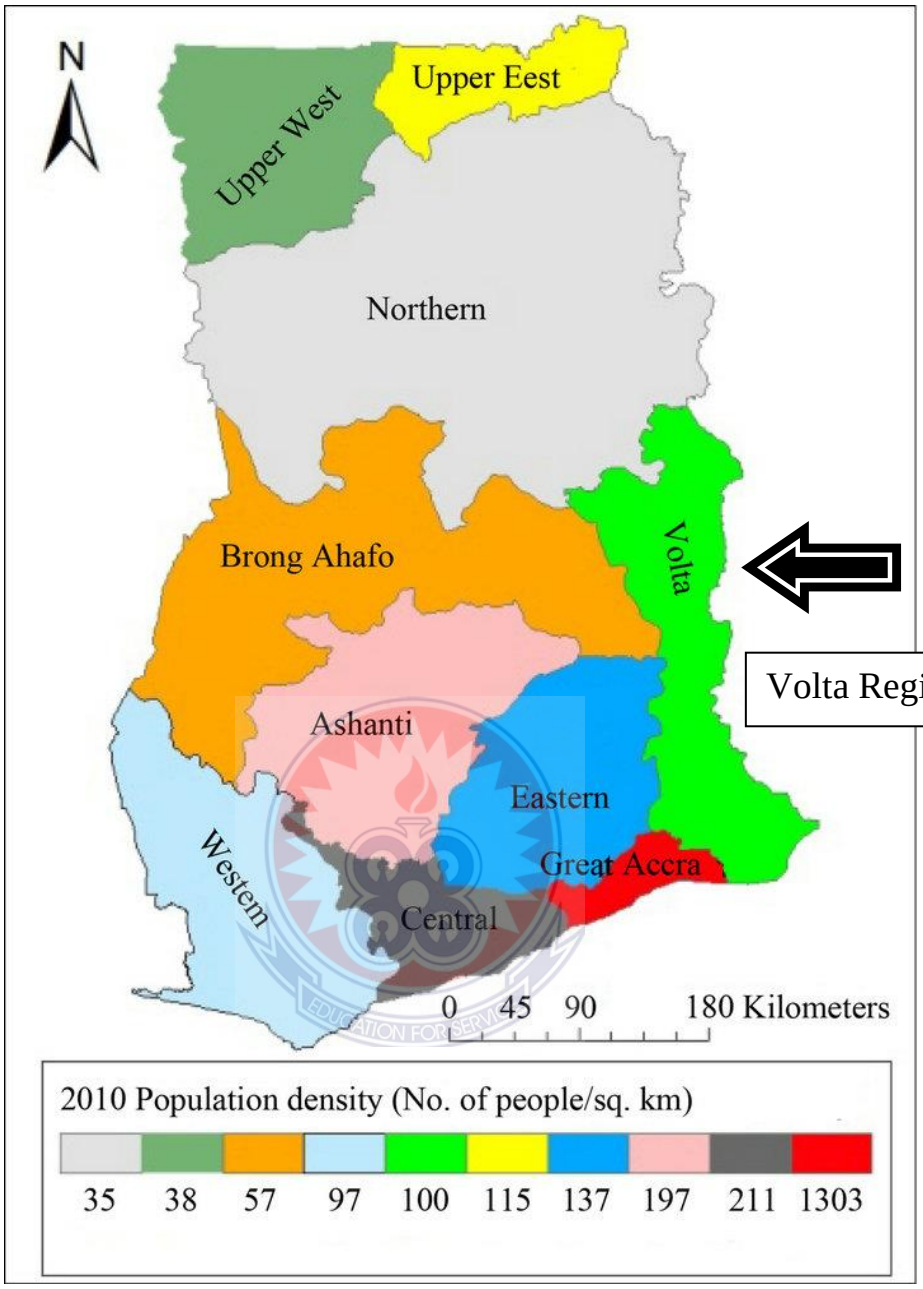

Plate 1:-Map of Ghana and the region where the study took place.

Source: newafrica.com, 2000, retrieved on 10/05/2013

Plate 2:-Volta Region and Ketu South Municipality where the study is carried out.

Source: Ketu South Municipal Assembly, 2011

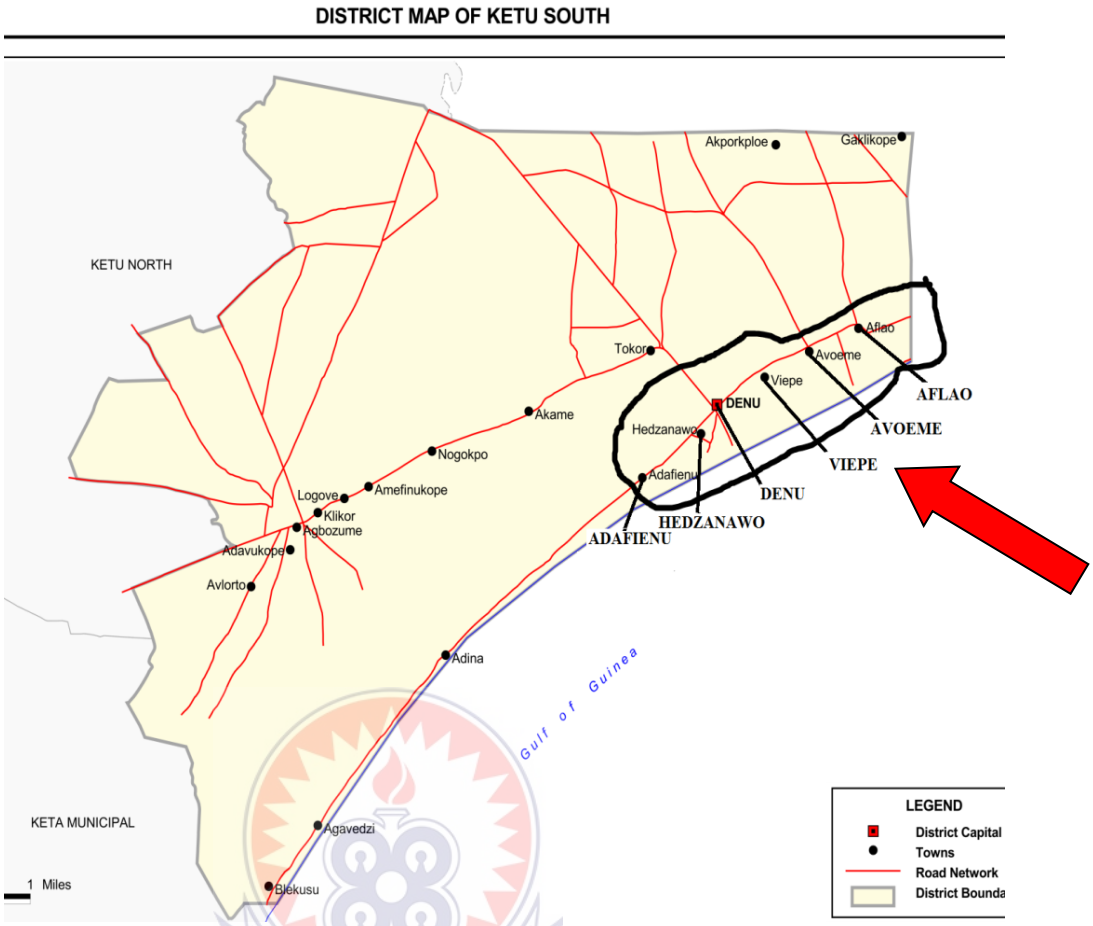

Plate 3:-Ketu South Municipal and study areas.

Source: Ketu South Municipal Assembly, 2011

3.3 Research Design

The study employed comparative research survey approach because the information to be gathered was a detailed comparison of formal and informal apprenticeship training programmes. This was to investigate the performance of individuals, groups, institutions and other social units. The purpose was to explore, examine and document phenomenon as it naturally occurs, which deserves more intensive investigation. Survey questionnaires were distributed to apprentice/students, master apprentice,

contractors and instructors in training schools, to obtain their perception of a particular training module.

3.4 Target Population

According to the Macmillan English Dictionary (2002) population is the number of people who live in a particular area. However, the research considered population as people from whom information would be gathered for the research work. In connection with this, it was highly impossible to collect data from all people trained through formal and informal apprenticeship modules with the Ketu South Municipality. In view of this, the researcher considered the target population as; electrical arc welding garages apprentices, master apprentices, students in training and contractors using the service of trainees.

3.5 Sample and Sampling Techniques

The estimated population of electrical arc welders in the Ketu South Municipality is six hundred, (600), (Source; Chairman of garage owners of Ketu South Municipality) which is made up of two hundred and thirty (230) apprentices under-going training, one hundred (100) students in training institutions, one hundred and fifty (150) master apprentices working, seventy (70) contractors and fifty (50) instructors. Figure 1 shows estimated population of electrical arc welders in the Ketu South Municipality.

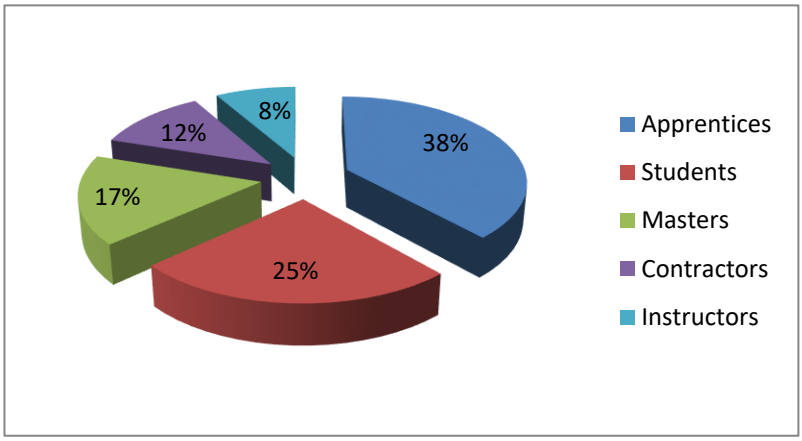

Figure 1: Estimated population of electrical arc welders in the Ketu South Municipality.

The above population is huge if everybody would be considered, because of the tedious work involved in laying hands on all the population. A combination of stratified random and quota sampling techniques was used on a sample size of hundred (100). This comprised thirty (30) apprentices under- going training, twenty-five (25) students in training institutions, twenty (20) master apprentices working, fifteen (15) contractors and ten (10) instructors. The researcher was convinced that the sample chosen was a true representation of the population which would make the information gathered authentic.

3.6 Research Instruments

Although a variety of instruments were available for the collection of data, the researcher decided to use questionnaires, observation and semi-structured interviews, as well as opinions and information from books, journals, and the internet in the collection of data. With these instruments, the researcher was convinced that the needed information would be collected, regarding the practical competency of

electrical arc welders trained under formal apprenticeship module and that of those trained under informal apprenticeship module.

3.6.1 Pre – test instruments

A pre-testing of the instruments was carried out using two (2) small – scale electrical arc welding garages, one (1) training institution, two (2) contractors and two (2) instructors at Denu in Ketu South. The objective was to check ambiguities and also establish the validity and reliability of the questionnaire and interview before they were administered to the target group.

3.6.2 Questionnaires

The questionnaires adopted were the closed type where respondents were given the chance to only tick the appropriate response to any item. Two (2) different questionnaires were administered to thirty (30) apprentices, twenty-five (25) students and another twenty (20) were given to master apprentices (workers). The questionnaires used were typed, with a brief introduction explaining the purpose for which they were made and how to answer them.

3.6.3 Semi – structured interview

A set of semi-structured interview questionnaire were prepared by the researcher for fifteen (15) selected contractors and ten (10) instructors in training institutions for they employ some apprentice into their firms. These interviews were conducted to allow informants the freedom to express their views in their own terms and also to provide reliable, comparable qualitative data which will help solicit views on comparing the practical competency of Arc welders trained under formal

apprenticeship module and that of those trained under informal apprenticeship module.

3.6.4 Method of data collection

The collection of data was based mainly on primary and secondary data sources. Primary data was obtained through observation, interviews and questionnaire while secondary data was obtained from training institutions, contractors who use the services of trainees.Copies of the questionnaires were produced and distributed to the targeted population. The respondents were given enough time to respond effectively to the questionnaire. Opinions, facts, figures and all the needed materials were gathered from the targeted population.

3.7 Data Analysis Procedure

The data gathered were converted from raw form to reduced and classified forms to make them appropriate for analysis. In the preparation of the data, accuracy was ensured and data entry errors were revealed and corrected. Activities that were followed in preparing the data included editing; coding and data entry.Editing of the raw data was done to detect errors and omissions of correction. This ensured that data become accurate and consistent with respect to the information demanded from respondents.

Coding was used to ensure categorization of data. This was done because the statistical software used for the data analysis worked more efficiently in the numeric mode. Coding rules which include exhaustiveness and mutual exclusivity were followed.

Statistical Package for Social Sciences (SPSS) for windows (version 16.0) was the analytical tool used to analyze the data. Cross-tabulation and chi-square were also used to establish relationships and associations. The results and findings of the study were presented using tables and graphs for discussion. A p-value less than 0.1 was considered significant to the study.

CHAPTER FOUR

RESULTS/FINDINGS

4.1 Introduction

This section of the study gives a detailed analysis of data gathered from questionnaire administration. A statistical analysis was performed by using the Statistical Product and Service Solution (SPSS) software for windows, version 16.0. After entering the data tables, pie chart and bar chart were generated. Descriptive analysis was used for the data gathered as a result of semi-structured interviews conducted among contractors and interaction including observation. By analyzing the data in this form, there would be an adequate amount of information to make conclusions.

4.2 Demographic Characteristics of Respondents

Table 4.1: Demography of Respondents

	(%)		
Characteristics	**Student Apprentice**	**Master Apprentice**	**Contractors/ Instructors**
Age			
20 years and below	10.9%	-	-
21 - 25 years	47.3%	-	
26 - 30 years	12.7%	28.0%	15.0%
31 - 35 years	10.9%	40.0%	5.0%
36 - 40 years	5.5%	32.0%	30.0%
41 years and above	12.7%	-	50.0%
Gender			
Male	89.1%	100.0%	10.0%
Female	10.9%	-	90.0%
Level of Education			
Basic	20.0%	28.0%	25.0%
Secondary / Technical	41.8%	72.0%	55.0%
Tertiary	38.2%	-	15.0%

Table 4.1 gives a detailed representation of the demographic characteristics of respondents used for the study. The researcher took into consideration responses of student apprentices, master apprentices and contractors/instructors. From the table, 89.1% of the student apprentices were male with the remaining 10.9% being female. All (100%) of the Master apprentices were male whilst 90% of the contractors or instructors were male with the remaining 10% being female. The gender of respondents indicates that most of the respondents were men and that all Master apprentices were male giving a clear indication that most males occupy higher positions in Mechanical workshops. Moreover, 47.3% of the student apprentices were between the ages of 21-25 years, 12.7% were between the ages of 26-30 years and 41 years and above, 10.9% were 20 years and below and 31-35 years whereas the remaining 5.5% were between the ages of 36-40 years. Over 1/3rd of the Master apprentices (40%) were between the ages of 31-35 years, 28% were between the ages of 26-30 years whilst 32% were between the ages of 36-40 years. Half (50%) of the contractors were 41 years and above, 30% were between the ages of 36-40, 15% were between the ages of 26-30 with the remaining 5% between the ages of 31-35 years.

Forty one percentage (41%) of the student apprentices had Secondary/Technical certificates, 38.2% possessed Tertiary certificates with 20% having Basic School certificates. However, 72% of the Masters apprentices had Secondary/Technical certificates whilst the remaining 28% had Basic school certificates. On the other hand, 15% of the of the Contractors/Instructors possessed Tertiary certificates, 55% possessed Secondary/Technical certificates whilst the remaining 25% had Basic School certificates. The education level of respondents implies that respondents

possessed adequate knowledge level to provide data needed for the drawing of conclusions for the study.

4.3 Training needs of apprentices on the formal and informal apprenticeship training modules

The researcher sought to find the training needs of student and master apprentices.

Table 4.2: Training needs of apprentices

	Student Apprentice			Master Apprentice		
Training need	**Frequency**	**Percentage**	**Mean + SD**	**Frequency**	**Percentage**	**Mean + SD**
How often you or your apprentices attend practical training / lessons						
Once a week	23	41.8	2.64(1.470)	17	68.0	1.96(1.428)
Once a month	3	5.5		8	32.0	
Once a term	-	-		-	-	
Every day	29	52.7		-	-	
Do you have enough tools equipment for your training						
Yes	21	38.2	1.62(.501)	8	32.0	1.68(.476)
No	34	61.8		17	68.0	
Do your workshop have first aid assistance						
Yes	20	36.4	1.64(.485)	15	60.0	1.40(.500)
No	35	63.6		10	40.0	

Table 4.2 shows the training needs of respondents (student apprentices and master apprentices). On the frequency of practical training/lessons, 29 respondents representing 52.7% of student apprentices said they attend practical training/lessons every day, 23 respondents representing 41.8% said they attended apprentices training/lessons once a week with only three respondents representing 5.5% declaring that they attend practical training/lessons once a month. The mean for the responses was 2.64 and a standard deviation of 1.47 indicating that student apprentices most often do not attend practical training/lessons monthly.

Seventeen (17) master apprentices representing 68% said they attend practical training/lessons once a week with the remaining eight (8) respondents representing 32% saying they attend apprentices practical training/lessons once a month. The mean

score for the responses was 1.961 with a standard deviation of 1.428 which shows that master apprentices attend practical training/lessons monthly.

Moreover, 21 student apprentices representing 38.2% said yes to the fact they had enough tools for training with 34 respondents representing 61.8% saying no to the fact that they had enough tools or equipment for training. The mean score for the responses was 1.62 which show that respondents do not enough tools or equipment for training. On the other hand, eight (8) respondents representing 32% of the master apprentices said yes to the fact that they have enough tools/equipment for training with the remaining 17 respondents representing 68% saying no to that assertion. The mean score remained at 1.68 and standard deviation of 0.476 indicating a strong disapproval to the fact that there were enough tools or equipment for training.

In addition, 20 respondents representing 36.4% of the student apprentices said yes to the fact that their workshops have first aid assistance with 35 respondents representing 63.6% saying no to this assertion. The mean score was 1.64 indicating a no response from respondents on the availability of first aid assistance. On the contrary, 15 respondents representing 60% of the Master apprentices said yes to having first aid assistance with the remaining 10 respondents representing 40% saying no to this assertion. The mean score for the responses was 1.40 which shows that most Master apprentices believed there was the availability of first aid assistance. Upon interrogation of respondents using the interview guide, 27% of respondents each said they received GH₵500 and GH₵600 with 12% each receiving GH₵700, GH₵800, and GH₵2500.

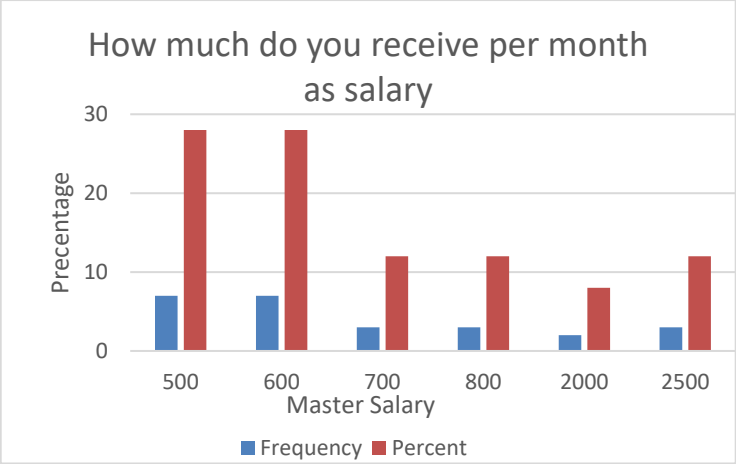

Figure 4.1: Salaries received by Apprentices

4.4 Stakeholder's Perceptions about the Quality of Training

Table 4.3: Contractor's view on Quality training

Quality training	Percent				
	1	2	3	Mean	±SD
Manipulating of modem tools and equipment	10.0	40.0	50.0	2.40	.681
The skills acquired by apprentice	20.0	25.0	55.0	2.35	.813
The effect of apprentice on the job	15.0	40.0	45.0	2.30	.733
Attitude toward safety at worksite	15.0	55.0	30.0	2.15	.671
Attitude toward maintenance of tools and equipment	20.0	50.0	30.0	2.10	.718

1=Poor 2=Average 3= Good

Table 4.3 gives a presentation of the perceptions of Constructors on the quality of training given to apprentices. Fifty percent (50%) of Contractors rated manipulating of modern tools and equipment good, 40% rated it average whilst the remaining 10% rated it poor. The mean score for the responses was 2.40 showing an average response rate by respondents.

Moreover, 55% of respondents rated the skills acquired by apprentice as being good, 25% rated it average with the remaining 20% rating it poor. The mean score was 2.35 also indicating that respondents viewed the skills acquired by apprentices as average.

On the other hand, 45% of respondents said the effect of apprentice on the job was good, 40% said it was average whilst the remaining 15% said it was poor. The mean score was 2.3 indicating that respondents viewed the effect of apprentice on the job as average.

With respect to the attitude toward safety at worksite, 55% of respondents rated it average, 30% rated it good whilst the remaining 15% rated it poor. The mean score was 2.15 showing that respondents viewed the attitude towards safety as average.

Half of the respondents (50%) rated the attitude toward maintenance of tools and equipment average, 30% rated it good with the remaining 20% rating it poor. The mean score was 2.10 which show that respondents view the attitude toward maintenance of tools and equipment average. Figure 4.2 depicts the view of respondents on the interview guide provided on the sufficiency of training time provided to apprentices. Fifty-six percent (56%) of respondents said no to the fact that training time was sufficient whilst 44% of respondents said yes.

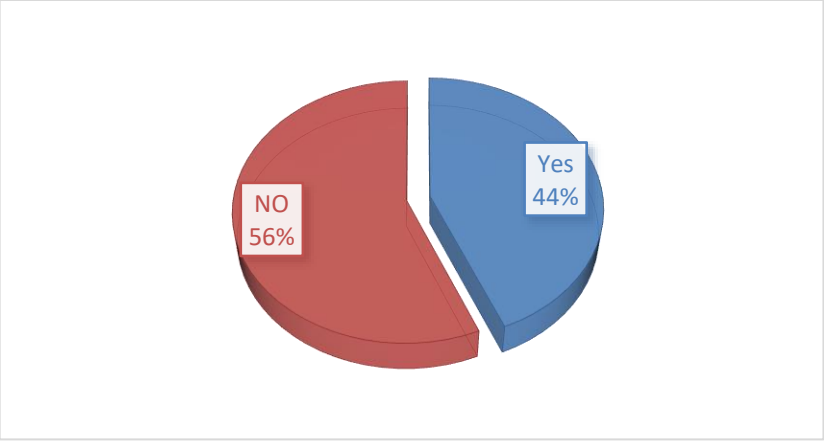

Figure 4.2: Sufficiency of Training programmes

4.5 Strategies to improve the effectiveness of Apprentice Training

Table 4.4: Strategies to Improve the Effectiveness of training

	Percent						
Quality training	**1**	**2**	**3**	**4**	**5**	**Mean**	**±SD**
Safety at the workshop or firm site	-	7.3	20.0	52.7	20.0	3.95	.803
Maintenance of tools and equipment	-	7.3	20.0	52.7	20.0	3.85	.826
Practical competency	5.8	-	17.3	63.5	13.5	3.85	.724
Skill learning are employable	5.5	-	12.7	70.0	10.9	3.82	.841
Design of training program pursing	12.7	20.0	60.0	7.3	-	3.62	.805
Adequacy of tool and equipment for training	5.5	12.7	23.6	43.6	14.5	3.49	1.069
Reputation of the skill among the public	23.6	-	18.2	45.5	12.7	3.47	.997

1= very bad 2=bad 3=neither good or bad 4=good 5= very good

Table 4.4 provides a presentation of the strategies that could be employed to improve the training modules given to apprentices. From the table, 20% of respondents said the safety at the workshop or firm site was very good, 52.7% said it was good, 20% remained neutral whilst 7.3% rated it bad. The mean score for responses was 3.93 showing that respondents viewed safety at the workshop good. On maintenance of tools and equipment, 20% said it was very good, 52.7% rated it good, 20% remained neutral whereas the remaining 7.3% said it was bad. The mean score was 3.85 also indicating a good rating from respondents on the maintenance of tools and equipment. However, 13.5% of respondents rated the practical competency of training very good, 63.5% rated it good, 17.3% were neutral whereas the remaining 5.8% rated it very poor. The mean for the responses was again 3.85 giving a good rating from respondents. On the contrary, 10.9% of respondents rated skill learning are employable very good, 70% rated it good, 12.7% remained neutral with 5.5% rating it

very poor. The mean score for the responses was 3.82 indicating that respondents saw it good that skill learning are employable. In addition, 60% of respondents rated the design of training program neutral, 20% rated it poor, 12.3% rated it very poor with the remaining 7.3% rating it good on a mean score of 3.62. This shows that respondents saw the design of training program good. With respect to the adequacy of tool and equipment for training, 14.5% of respondents rated it very good, 43.6% rated it good, 23.6% remained neutral, 12.7% rated it poor whilst 5.5% rated it very poor. The mean score for the responses was 3.49 indicating a sense of neutrality in respondents' responses. Finally, on the reputation of the skill among the public 12.7% rated it very good, 45.5% rated it good, 18.2% rated it neutral with the remaining 23.6% rating it very poor. The mean score for the responses was 3.49 indicating a sense of neutrality in respondents' responses. Correspondingly, on the interview guide, 60% of respondents said the training programs was very effective with 40% grading it average as shown in Figure 4.3.

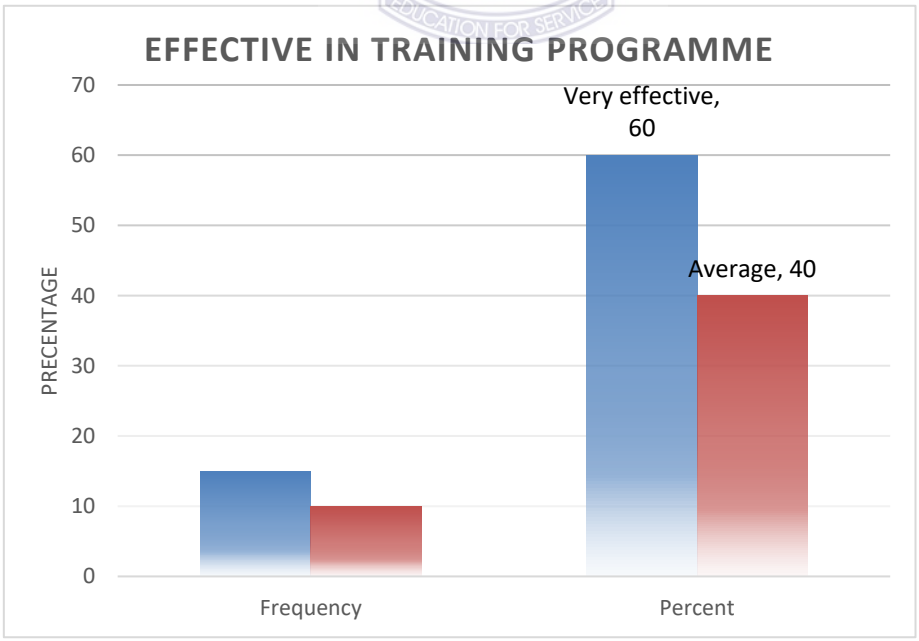

Figure 4.3: Effective training programme

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 Introduction

The chapter discuses the views of respondents on the apprenticeship training models in relation to the following:-

- Training needs of apprentices.
- Stake holder's perceptions about the Quality of training.
- Strategies to improve the effectiveness of training

5.2 Training Needs of Apprentices

The research findings revealed that 47.3% of apprentices and 76% of master apprentices do not attend practical training lessons always. Moreover 61.8% representing student apprentices 68% representing master apprentices said no to the fact that they had enough tools or equipment for training. A critical examination of Table 4.2 shows that majority of student apprentice, 63.6% and 40% representing master apprentice said that their workshop is having no first aid assistance. Upon interrogation of respondents using the interview guide, 27% of respondents each said they received GH₵500 and GH₵600 with 12% each receiving GH₵700, GH₵800, and GH₵2500. According to the literature reviewed, Chudley (1984) stated that the availability of facilities at the workshop for effective training ensures good relationship between the management and trainees. In his view, the better the facilities and amenities, the greater the commitment of instructors and trainees during training sessions. Delucy & Hayni, (2000) further stressed that safety need to become automatic to support work procedures. Based on the results of the study, apprentices

stressed on the non-availability of first aid and this implies that workshop managers should strive to make first aid available during training sessions for apprentices. Lamendola (1998) also stresses on the frequency of training programs putting it that the instructor should spread topics across a week instead of doing it once at a time. In this view, with the average frequency for the implementation of training programs being a month, it becomes expedient on managers and trainers to implement training programs in a more appropriate ways that benefits apprentices.

5.3 Stakeholder's Perceptions about the Quality of Training

From table 4.3 it shows that half of the contractors interviewed rated the manipulating of modem tools and equipment by apprentices is not good. Also 45% of the contractor's rate the skills acquire by apprentice not good. 45% of respondents said the effect of apprentice on job was good, 40% said it was average whilst the remaining 15% said it was poor. The study also reveals that 30% of the respondents rate the attitude of apprentice towards safety at worksite and maintenance of tools good.

Figure 4.2 depicts the view of respondents on the interview guide provided on the sufficiency of training time provided to apprentices. Fifty-six percent (56%) of respondents said no to the fact that training time was sufficient whilst 44% of respondents said yes. The findings of the study buttress the view of Bobinski (2000) who stated that the quality of training is dependent on the comprehensiveness of the training. Bobinski (2000) outlined five rubrics needed for effective training; a quality facilitator, appropriate training, a quality curriculum, training location and apprentices who know why they are training. Based on the view of Bobinski (2000), respondents

felt their skills were improved at manipulating modern tools and equipment with the trainers ensuring safety at the worksite.

5.4 Strategies to Improve the Effectiveness of Apprentice Training

A critical examination on Table 4.4 the study that the respond to quality training (safety at the workshop, maintenance of tools, skills learning are, design of training program pursuing, adequacy of tool and equipment of training, repetition of skills among public) all sum up to 760. Out of which 12.1% rated very good, 52.7% rated good, 8.9% rated poor, 3.5% rated bad and 22.8% rated neutral. Correspondingly, on the interview guide, 60% of respondents said the training programs was very effective with 40% grading it average as shown in figure 4.3. The issue of maintenance as revealed in the study is supported by Dhillon (2002) who cited that maintenance is carried out to ensure acceptable level of performance over a facility's design service life. Sackey, et. al, (1994) thinks an efficient maintenance program must always be put in place to ensure equipment and machines work efficiently. According to the Agence Francaise de Development (2007), enhance the structuring role of professional organizations in defining the demand for training goes a long way to ensure effective training programs for apprentices.

CHAPTER SIX

SUMMARY, CONCLUSIONAND RECOMMENDATIONS

6.1 Introduction

The purpose of the study was to examine the role of educational background, socioeconomic status and the assistance provide by parents to children school related activities. The final chapter summarizes the finding of the study, discusses the implications of the findings and suggested relevant recommendations for level of teachers understanding of students learning styles and their influence in their teaching.

6.2 Summary of Findings

Findings from the study revealed that 52.7% of student apprentices attend practical training/lessons every day, 68% of Master apprentices attend practical training/lessons once a week. On an average of 2.64, all respondents accepted that they attend training programs once a term. Moreover, 61.8% of student apprentices do not have enough tools or equipment for training, 68% of Master apprentices do not have enough tools or equipment for training. On the other hand, 63.6% of student apprentices said no to having first aid assistance at the workshop, 60% of master apprentices however said yes to having first aid assistance. On the contrary, respondents rated the quality of training average. All respondents felt the strategies employed to improve the quality of training was good with a mean response rate of 3.2.

6.3 Conclusion

Training remains an important requirement for improved work quality at various workshops. The researcher draws the following conclusions from the results of the study.

Technical and vocational training play an indispensable role in the development of a country since it provides practical human resources for the economy through the acquisition of skills.

This study was undertaken to evaluate the practical competency of arc welders trained under formal and informal apprenticeship module and its impact on the development of the people in the Ketu South Municipal Area. As part of this objective, the study assessed the perceived training needs of craftsperson's regarding self-employment skills and also examined training facilities available for training apprentices.

The study employed both qualitative and quantitative statistical procedures to analyse the data collected through questionnaire and interviewing respondents. A total of 100 respondents were sampled to the study using purposive, stratified and quota sampling techniques.

The study revealed that practical training on the job was given to apprentices every month, and the issue of insufficient tools and equipment at training is a serious setbacks with the quality of practical training being good. Even though the quality of training is good, respondents affirmed that various strategies must be put in place to improve the quality of training.

6.4 Recommendations

Based on the findings from a careful systematic analysis of the study, the researcher recommends that;

1. The Ministry of employment and Labour relations should provide consistent checks of safety at workshops and also some form of safety education which will help determine and identity hazards were readily, thus being more likely to avoid serious injuries.
2. Firms must try as much as they can to provide practical training sessions for apprentices and employees every week and which will make the training programme effective. It will help apprentice to equip techniques, the right and adequate skills.
3. The Government should assist firms in making provisions for tools and equipment at the workshop through support of the Skills Development Fund (SDF) such as interest free loans with flexible repayment terms. This will help apprentice get asses to enough tools and equipment to manipulate.
4. Firms should put in place appropriate monitoring systems to monitor the progress of the training programs provided to employees or apprentices to ensure that new strategies are employed for subsequent training programs which help to attract more students/apprentice to the job.

6.5 Suggestions for Further Studies

The researcher suggests that a larger sample size of apprentices is considered in subsequent studies in this area. The studies could also be carried out on importance of practical work in science related courses.

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APPENDIX A
QUESTIONNAIRE FOR STUDENTS/APPRENTICES

The study focuses on evaluating the practical competency of Arc welders trained under formal and informal apprenticeship module in the Ketu South Municipal Area of Volta Region. This questionnaire is designed purely for academic work in partial fulfillment of the award of the Master of Technology Education degree in Mechanical. All information shall be treated as confidential. The guarantee of your anonymity is assured.

Thank you in advance

SECTION A

Bio-data

Please read and tick [√] the appropriate box

1. Gender
   a. [ ] Male
   b. [ ] Female
2. Age
   a. [ ] 20 years and below
   b. [ ] 21-25 years
   c. [ ] 26-30 years
   d. [ ] 31-35 years
   e. [ ] 36-40 years
   f. [ ] 41 years and above
3. Marital status
   a. [ ] Married
   b. [ ] Single

c. [ ] Divorce

d. [ ] Widow

4. Level of Education

a. [ ] Basic

b. [ ] Secondary/Technical

c. [ ] Tertiary

d. [ ] Nil

e. [ ] Drop out

5. How long have you been in this apprenticeship training?

a. [ ] less than 1 year

b. [ ] 1-2 years

c. [ ] 3-5 years

d. [ ] more than 4 years

6. How much did you guardian pay to your "masters" as a training fee?

……

7. Do you pay additional fees for practical training?

Yes [ ] No [ ]

8. How long do you expect this training to last before you can graduate?

……

9. How often do you attend practical training/lessons?

Once a week [ ] Once a month [ ] Once a term [ ] Every day [ ]

10. What type of training do you undergo?

Theory [ ] Practical [ ] Watching and imitating [ ]

Other specifications……..

11. Is the training time sufficient?

a. Yes [ ] No [ ]

b. If no why?.....

12. Do you have enough tools and equipments for your training?

Yes [ ] No [ ]

13. How often are the tools and equipments replaced or maintained?

Daily [ ] Weekly [ ] Quarterly [ ]

14. Do your workshop have first aid assistance?

Yes [ ] No [ ]

15. What safety measures are carried out at the workplace?

……
……

16. How effective is the training programme?

Very effective [ ] Effective [ ] Average [ ] Not effective [ ]

17. How do you rate your skills, competency and condition on the field of work?

Please use the scale of answers from:

1-Very bad, 2-bad, 3-neither good or bad, 4-good, 5-very good

1	2	3	4	5		
[ ]	[ ]	[ ]	[ ]	[ ]	a.	Design of training program pursing
[ ]	[ ]	[ ]	[ ]	[ ]	b.	Practical competency
[ ]	[ ]	[ ]	[ ]	[ ]	c.	Skills learning are employable
[ ]	[ ]	[ ]	[ ]	[ ]	d.	Reputation of the skills among the public
[ ]	[ ]	[ ]	[ ]	[ ]	e.	Adequacy of tools and equipment for training
[ ]	[ ]	[ ]	[ ]	[ ]	f.	Maintenance of tools and equipment

[ ] [ ] [ ] [ ] [ ] g. Safety at the workshop or firm site

18. What are the problems/challenges you are facing during the training?

.....
.....
.....
.....
.....

19. What are the causes of these problems/challenges?

.....
.....
.....
.....
.....

20. Suggest any two (2) ways to prevent these challenges.

a. ……..……..

b.……

APPENDIX B

QUESTIONNAIRE FOR EMPLOYEDMASTER APPRENTICESEMPLOYED

The study focuses on evaluating the practical competency of Arc welders trained under formal and informal apprenticeship module in the Ketu South Municipal Area of Volta Region. This questionnaire is designed purely for academic work in partial fulfillment of the award of the Master of Technology Education degree in Mechanical. All information shall be treated as confidential. The guarantee of your anonymity is assured.

Thank you in advance

SECTION A

Bio-data

Please read and tick [√] the appropriate box

1. Gender
   a. [ ] Male
   b. [ ] Female
2. Age
   a. [ ] 20 years and below
   b. [ ] 21-25 years
   c. [ ] 26-30 years
   d. [ ] 31-35 years
   e. [ ] 36-40 years
   f. [ ] 41 years and above

3. Marital status

a. [ ] Married

b. [ ] Single

c. [ ] Divorce

d. [ ] Widow

4. Level of Education

a. [ ] Basic

b. [ ] Secondary/Technical

c. [ ] Tertiary

d. [ ] Nil

e. [ ] Drop out

5. How long have you been working here?

a. [ ] 1-5 years

b. [ ] 5-10 years

c. [ ] 10-15 years

d. [ ] 15-20 years

e. [ ] 21 and above years

6. Who is paying your salary?

Government [ ]

Contractor/manager [ ]

NGO's [ ]

Own master [ ]

7. How much do you receiver per month as salary?

…….....

8. What is the total number of apprentices receiving training in your workshop/firm?

1-4 [ ] 5-10[ ] 11-15 [ ] 16 and more [ ]

9. What are your modes of skills training?

Theory/practical [ ]

Watching/imitating the master [ ]

On-the job practical/training [ ]

Others specify……

10. How often do your apprentices attend practical training/lessons?

Once a week [ ] Once a month [ ] Once a term [ ]

Every day [ ]

11. Do you have enough tools equipment for your training?

Yes [ ] No [ ]

12. How often do you maintain your tools and equipment?

Daily [ ] Weekly [ ] Quarterly [ ]

13. How effective is the training programme?

Very effective [ ] Effective [ ] Average [ ]

Not effective [ ]

14. Do your workshop have first aid assistance?

Yes [ ] No [ ]

15. What safety measures are carried out at the workplace?

……

……

16. How can you rate the skill level of your apprentices?

Very good [ ] Good [ ]

Others specify……

17. What do you think your apprentices need to go through the training moduls?

……

18. What are the problems/challenges you are facing during training of your apprentices?

.....
.....

18. What are the causes of these problems/challenges?

.....
.....

20. Suggest any two (2) ways that can be done to improve the apprentice training.

a. ……..……..

b.……

THANK YOU

APPENDIX C

SEMI-STRUCTURED INTERVIEW GUIDE FOR CONTRACTORS AND INSTRUCTORS

The study focuses on evaluating the practical competency of Arc welders trained under formal and informal apprenticeship module in the Ketu South Municipal Area of Volta Region. This questionnaire is designed purely for academic work in partial fulfillment of the award of the Master of Technology Education degree in Mechanical. All information shall be treated as confidential. The guarantee of your anonymity is assured.

Thank you in advance

Please, I would be grateful if you could kindly assist me to conduct this interview by ticking [√] where appropriate and comment where necessary.

1. What is your age?.....
2. Your gender: Female [ ] Male [ ]
3. What is your highest educational level……
4. How long have you personally been working as a contractor/instructor?

   ……
5. How many workers do you employ at your firm?.....
6. Are the tools and equipment adequate for your workers?

   ……..
7. Are your workers output effective?

   Yes [ ] No [ ]

How would you rate your workers on the following skill competencies? (Poor, average, good)

8. Manipulating of modern tools and equipments……

9. The effect of apprentice on the job……..

10. The skills acquired by apprentice……..……

11. Attitude towards maintenance of tools and equipment……

12. Attitude towards safety at worksite ……..

13. What do you think are the problems/challenges your workers faced during the training?

.....

14. What are the causes of these problems/challenges?

.....
.....

15. What can be **done/is being done** to address these problem/challenges?

……

THANK YOU

APPENDIX D

These appendix shows how apprentice and master apprentice work at electrical arc welding workshops in Ketu South Municipal.

Plate 4:- apprentice painting a metal desk

Plate 5:- apprentice welding a cage

Plate 6:- apprentice welding a metal bar

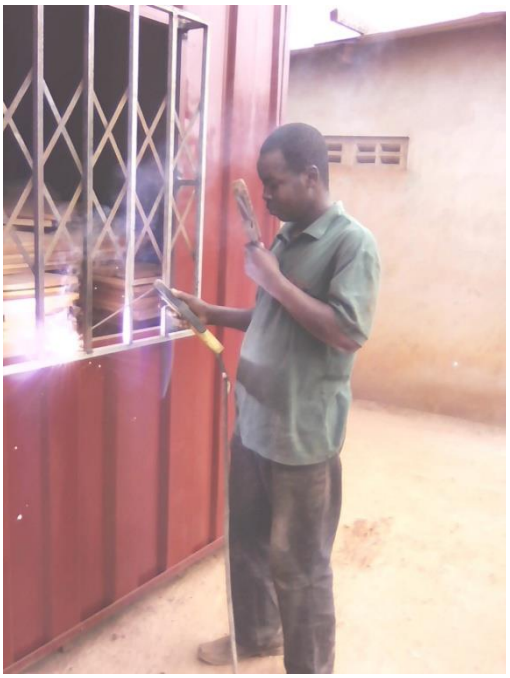

Plate 7:- apprentice welding a container

Plate 8:- apprentice welding a truck

Plate 9:- apprentice working on a car

Plate 10:- apprentice working on site

Plate 11:- apprentice working on site