KWARA STATE POLYTECHNIC

P.M.B 1375, ILORIN - NIGERIAN

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A TECHNICAL REPORT OF STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES) REPORT

HELD AT:

KAM INDUSTRIES NIGERIA LIMITED

ASA-DAM ROAD BESIDE NNPC MEGA STATION ILORIN KWARA STATE

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ND/23/MET/FT/0012

SUBMITTED TO:

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IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF NATIONAL DIPLOMA

AUGUST - NOVEMBER 2024

DEDICATION

I dedicate this SIWES Works to Almighty God whose supremacy in the knowledge of everything is absolute and my parent **Mr. and Mrs. OLORUNTIMILEYIN**

ACKNOWLEDGEMENT

All thanks to Almighty God, the creator of the worlds, for His protection, mercy, goodness and favor throughout my SIWES programme and also for improving to pass through part of the hurdles of my education.

My special appreciation goes to my parents MR. and MRS. Oloruntimileyin May God abundantly reward you all (Amen).

Special thanks to all my friends and colleagues who stood by me till now with their patience and understanding to make little out of no time for them to guide and correct me throughout the period of his work and to my SIWES thank you all.

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CHAPTER ONE

1.1 INTRODUCTION TO SIWES

The student industry work experience scheme (SIWES) is the acceptable skills training program which forms part of the approval minimum academic standard in the various degree programs for all Nigerian tertiary institutions.

It is an effort ti bridge the gap existing between theory and practical of science, Engineering and Technology, Agriculture, Management and all other professional education program in Nigerian tertiary institutions.

It is aimed at exposing students to machine and equipment professional work method and way of safe guarding other organizations. The scheme is a tripartite program involving the polytechnic, university and college of Education all going into the industries [employer of labor].

1.2 BACKGROUND OF SIWES

The student industrial work experience scheme (SIWES) is a skills training program designed to expose and prepare student of higher institution for the working environment they are likely to meet after graduation. SIWES was established by industrial Training Fund (ITF) in 1973 to solve the problem of lack of adequate practical skills, in preparation for employment in industries by Nigerian graduates.

The SIWES program runs in the Nigeria universities in conjunction with the industrial Training Fund unit, to promote practical in tertiary institutions. The aim of the program is to bridge the gap existing between theoretical aspects of what is being taught in the lecture rooms and what is actually obtained in the field it is aimed at exposing students to challenges they are likely to come across upon their graduation from the universities and to adequately expose students to professional work methods.

Participation in industry training is a well known strategy. Classroom studies are integrated with learning through hands-on work experience in a field related to the student academic major and career goal. It enhances an experiential learning process that not only promotes career preparation but also provides opportunities for learning to develop skills necessary to become leaders in their chosen profession.

Participation in SIWES has become a necessary pre-condition for the award of Diploma and Degree certification in specific discipline in most institutions of higher learning in the country in accordance with the educational policy of government.

OPERATORS OF THE SIWES PROGRAM: the industrial training fund (ITF), employers of labour, the higher institutions, and some coordinating agencies like Nigeria Universities commission (NUC), National commission for civic Education (NCCE) and national Board for Technical Education (NBTE) are the operators of this program.

FUNDING: the federal government of Nigeria fund this program

BENEFICIARIES: undergraduate students of the following Agricultural, Engineering Technology, Environmental, Science, Medical sciences and pure and Applied Science.

DURATION: one year for polytechnic, four months for college of education and six months for the Universities.

1.3 AIMS AND OBJECTIVES OF SIWES

AIMS:

The aims of the student industrial work experience scheme (SIWES) are as fellows

- To expose students to industrial base skills necessary for smooth transition from classroom to the world and the applicability of work done in various schools go meet the industrial demand.
- To bridge the gap existing between theoretical aspects of what is being taught in the lecture rooms and practical aspects what is actually gained in the field.

- To expose students to the challenges they are likely to come across upon their graduation from the university and to adequately expose student to professional work methods.

OBJECTIVES:

- Expose students to work method and techniques in handling equipment and machinery that may not be available in the school.
- Prepare students for the work situation they are likely to meet after graduation.
- To provide an avenue for students in the Nigeria universities & polytechnic to acquire industrial skills and experience in their course of study.
- To make the transition from polytechnic to the world of work easier and enhance student contact for later job placement.
- Provide students with an opportunity to apply their theoretical knowledge in real work situations thereby bridging the gap between polytechnic work and actual practice.

CHAPTER TWO

2.1 BRIEF HISTORY OF THE ORGANIZATION

KAM Industries Nigeria Limited, founded by Dr. Kamoru Yusuf in 1997, has evolved into one of Nigeria's foremost indigenous steel and allied production companies.

Initially focusing on the production of roofing sheets and nails, the company expanded its product line to include reinforced steel bars, wire products, and various roofing materials.

Over the years, KAM Industries has grown into a conglomerate with operations across multiple Nigerian states, including Kwara, Ogun, Kaduna, and Delta. The company is notable for operating one of Africa's few Electric Arc Furnaces, enabling the efficient conversion of scrap into liquid steel.

This technological advancement underscores KAM Industries' commitment to innovation and sustainability in steel manufacturing.

Beyond its industrial achievements, KAM Industries has made significant contributions to community development, investing in infrastructure projects, healthcare, education, and empowerment initiatives.

The company's dedication to quality and excellence is further evidenced by its attainment of the UK CARES certification, a prestigious recognition in the steel manufacturing sector.

Through strategic growth and diversification, KAM Industries Nigeria Limited has solidified its position as a leader in the nation's steel industry, playing a pivotal role in Nigeria's industrialization and economic development.

2.2 MISSION AND OUR STORY OF ORGANIZATION

OUR STORY

The success story of our business is scripted essentially by its perseverance, passion for excellence and firm commitment towards our stakeholders and business

environment. The growth pattern of our business, no doubt, reflects the future corporation poised to become the most preferred Steel manufacturer in Africa.

OUR MISSION

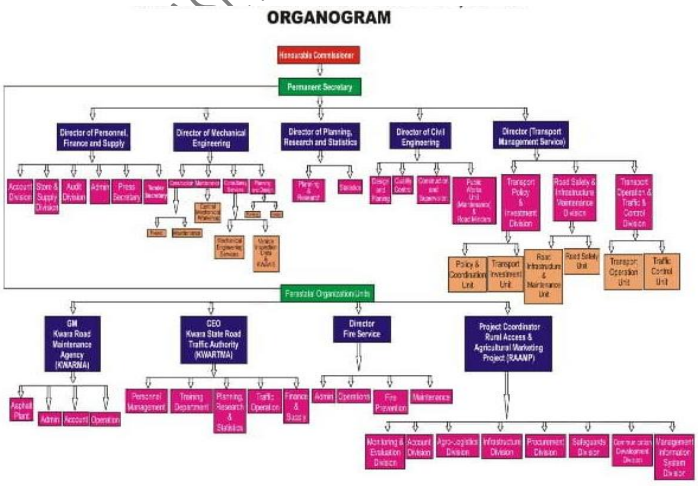
To be a Global Leader in Steel and Building Materials manufacturing with a brand name synonymous with excellence. To provide high-quality products that meet international standards.

Executive & Group Leadership

Our executive management bring tremendous experience, visionary thinking and a shared commitment to excellence creativity and innovation

2.3 STRUCTURE OF ORGANIZATION

An organization structure can improve or hinder efficiency in an organization. The structure plays a crucial role in an organization. It defines the allocation of responsibilities and powers, reporting relationships and processes, hierarchy levels and value added, allocation resources and determining skills requirement and affordability.



CHAPTER THREE

3.1 SCREWDRIVER

A typical simple screwdriver has a handle and a shaft, ending in a tip the user puts into the screw head before turning the handle. This form of the screwdriver has been replaced in many workplaces and homes with a more modern and versatile tool, a power drill, as they are quicker, easier, and can also drill holes. The shaft is usually made of tough steel to resist bending or twisting. The tip may be hardened to resist wear, treated with a dark tip coating for improved visual contrast between tip and screw—or ridged or treated for additional "grip".

Handles are typically wood, metal, or plastic[1] and usually hexagonal, square, or oval in cross-section to improve grip and prevent the tool from rolling when set down. Some manual screwdrivers have interchangeable tips that fit into a socket on the end of the shaft and are held in mechanically or magnetically. These often have a hollow handle that contains various types and sizes of tips, and a reversible ratchet action that allows multiple full turns without repositioning the tip or the user's hand.

A screwdriver is classified by its tip, which is shaped to fit the driving surfaces (slots, grooves, recesses, etc.) on the corresponding screw head. Proper use requires that the screwdriver's tip engage the head of a screw of the same size and type designation as the screwdriver tip. Screwdriver tips are available in a wide variety of types and sizes (List of screw drives). The two most common are the simple 'blade'-type for slotted screws, and Phillips, generically called "cross-recess", "cross-head", or "cross-point".

A wide variety of power screwdrivers ranges from a simple "stick"-type with batteries, a motor, and a tip holder all inline, to powerful "pistol" type VSR (variable-speed reversible) cordless drills that also function as screwdrivers. This is particularly useful as drilling a pilot hole before driving a screw is a common

operation. Special combination drill-driver bits and adapters let an operator rapidly alternate between the two. Variations include impact drivers, which provide two types of 'hammering' force for improved performance in certain situations, and "right-angle" drivers for use in tight spaces. Many options and enhancements, such as built-in bubble levels, high/low gear selection, magnetic screw holders, adjustable-torque clutches, keyless chucks, "gyroscopic" control, etc., are available.

3.2 MACHINE GUARDING

Machine guarding is a safety feature on or around manufacturing or other engineering equipment consisting of a shield or device covering hazardous areas of a machine to prevent contact with body parts or to control hazards like chips or sparks from exiting the machine. Machine guarding provides a means to protect humans from injury while working nearby or while operating equipment. It is often the first line of defense to protect operators from injury while working on or around industrial machinery during normal operations. In the U.S., machine guarding is referred to in OSHA's CFR 1910.212, in the U.K., machinery safety is covered mainly by PUWER.

Point guarding

Point guarding around gear operation of machine

Point guarding refers to guarding of moving parts on a machine that present a hazard to the machine operator or others who may come in contact with the hazard. OSHA 1910.212(a)(2) requires these guards to be "affixed to the machine where possible. Specifics for the type and construction of the guard are determined by the proximity of the guard to the hazard, and the type of hazard. Point of Operation Guarding refers to guarding the area of the machine where the work is performed. Construction of the machine and the guarding should "prevent the operator from having any part of his/her body in the danger zone during the operating cycle.

Fixed perimeter guarding

Fixed perimeter guarding with weld curtains

Perimeter or barrier guarding refers to a barrier placed around a work area where an automated piece of equipment-like a robotic arm-performs a function. This type of guarding is generally a wire partition system, but also can take the form of pressure sensitive mats or light curtains. Wire partitions systems used as machine guards must

be fixed in place either on the machine or around its perimeter. These guarding systems may be configured with various sizes of wire mesh, solid sheet metal, or clear polycarbonate panels. Use of these materials depends on the hazard being guarded and the distance between the hazard and the guard. Mesh opening size of the guard depends on the proximity of the guard to the hazard. If the guard is installed close to moving parts, the mesh openings must be smaller than if the guard is installed a greater distance away from the moving parts. Mesh opening sizes for specific distances from the hazard are defined in ANSI/RIA R15.06-2012.Solid barriers such as sheet metal or clear view polycarbonate can be used to shield the hazard as well as control sparks or liquids. Size of the barrier (height and width) must conform to ANSI/RIA R15.06-2012. Wire partition guards provide a means of access to the guarded equipment with doors, lift out sections, or other controlled openings.

Safety devices

Electrical interlock mounted on wire mesh machine guarding

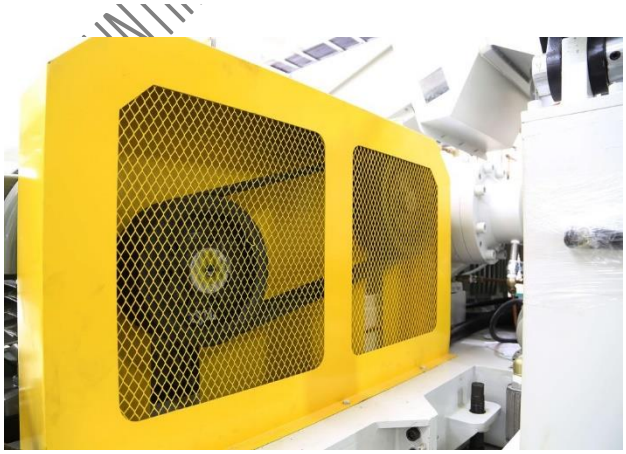
Electrical interlocks or other devices tied into the equipment's control circuit are mounted on access points and are configured to stop equipment operations when

opened. These access points should also incorporate hardware to comply with the OSHA lockout/tagout regulation 1910.147.[6] The lockout/tagout hardware allows the operator or maintenance person to lock the equipment in the stopped state while performing duties in the hazardous area.

Light curtain systems may be used alone or in conjunction with other guarding systems. The light curtain projects a field or beams of light between two points and, when the field is broken-at any point, the light curtain system interrupts the circuit it is wired into. These can be used in areas where an operator must interact with operating equipment to prevent movement of the equipment while the operator works a hazardous area.

Pressure sensitive mat for operator of laser cutter

Pressure sensitive mats that are wired into the equipment's control system can be placed in hazardous areas and be set to stop the equipment if stepped on. These devices can be used alone or in conjunction with other guarding devices, usually at operator interaction points.



3.3 SPANNER

A **wrench** or **spanner** is a tool used to provide grip and mechanical advantage in applying torque to turn objects—usually rotary fasteners, such as nuts and bolts—or keep them from turning.

In the UK, Ireland, Australia, and New Zealand spanner is the standard term. The most common shapes are called open-ended spanner and ring spanner. The term wrench is generally used for tools that turn non-fastening devices (e.g. tap wrench and pipe wrench), or may be used for a monkey wrench—an adjustable pipe wrench.

In North American English, wrench is the standard term. The most common shapes are called open-end wrench and box-end wrench. In American English, spanner refers to a specialized wrench with a series of pins or tabs around the circumference. (These pins or tabs fit into the holes or notches cut into the object to be turned). In American commerce, such a wrench may be called a spanner wrench to distinguish it from the British sense of spanner.

Higher quality wrenches are typically made from chromium-vanadium alloy tool steels and are often drop-forged. They are frequently chrome-plated to resist corrosion and for ease of cleaning.

Hinged tools, such as pliers or tongs, are not generally considered wrenches in English, but exceptions are the plumber wrench (pipe wrench in British English) and Mole wrench (sometimes Mole grips in British English).

The word can also be used in slang to describe an unexpected obstacle, for example,

"He threw a spanner in the works" (in U.S. English, "monkey wrench").

3.4 THE CENTRE LATHE

A **lathe** is a machine tool that rotates a workpiece about an axis of rotation to perform various operations such as cutting, sanding, knurling, drilling, deformation, facing, threading and turning, with tools that are applied to the workpiece to create an object with symmetry about that axis.[1]

Lathes are used in woodturning, metalworking, metal spinning, thermal spraying, reclamation, and glass-working. Lathes can be used to shape pottery, the best-known design being the Potter's wheel. Most suitably equipped metalworking lathes can also be used to produce most solids of revolution, plane surfaces and screw threads or helices. Ornamental lathes can produce three-dimensional solids of incredible complexity. The workpiece is usually held in place by either one or two centers, at

least one of which can typically be moved horizontally to accommodate varying workpiece lengths. Other work-holding methods include clamping the work about the axis of rotation using a chuck or collet, or to a faceplate, using clamps or dog clutch. Of course, lathes can also complete milling operations by installing special lathe milling fixtures.

Examples of objects that can be produced on a lathe include screws, candlesticks, gun barrels, cue sticks, table legs, bowls, baseball bats, pens, musical instruments (especially woodwind instruments), and crankshafts.

Modes of use

When a workpiece is fixed between the headstock and the tail-stock, it is said to be "between centers". When a workpiece is supported at both ends, it is more stable, and more force may be applied to the workpiece, via tools, at a right angle to the axis of rotation, without fear that the workpiece may break loose.

When a workpiece is fixed only to the spindle at the headstock end, the work is said to be "face work". When a workpiece is supported in this manner, less force may be applied to the workpiece, via tools, at a right angle to the axis of rotation, lest the workpiece rip free. Thus, most work must be done axially, towards the headstock, or at right angles, but gently.

When a workpiece is mounted with a certain axis of rotation, worked, then remounted with a new axis of rotation, this is referred to as "eccentric turning" or "multi-axis turning". The result is that various cross sections of the workpiece are rotationally symmetric, but the workpiece as a whole is not rotationally symmetric. This technique is used for camshafts, various types of chair legs.

Sizes

Lathes are usually 'sized' by the capacity of the work that they may hold. Usually large work is held at both ends either using a chuck or other drive in the headstock and a centre in the tailstock. To maximise size, turning between centres allows the

work to be as close to the headstock as possible and is used to determine the longest piece the lathe will turn: when the base of the tailstock is aligned with the end of the bed. The distance between centres gives the maximum length of work the lathe will officially hold. It is possible to get slightly longer items in if the tailstock overhangs the end of the bed but this is an ill-advised practice. Purchasing an extension or larger bed would be a wise alternative.

The other dimension of the workpiece is how far off-centre it can be. This is known as the 'swing' ("The distance from the head center of a lathe to the bed or ways, or to the rest. The swing determines the diametric size of the object which is capable of being turned in the lathe; anything larger would interfere with the bed. This limit is called the swing of the bed. The swing of the rest is the size which will rotate above the rest, which lies upon the bed.")[10] from the notion that the work 'swings' from the centre upon which it is mounted. This makes more sense with odd-shaped work but as the lathe is most often used with cylindrical work, it is useful to know the maximum diameter of work the lathe will hold. This is simply the value of the swing (or centre height above the bed) multiplied by two. For some reason, in the U.S. swing is assumed to be diameter but this is incorrect. To be clear on size, it is better, therefore, to describe the dimension as 'centre height above the bed'. As parts of the lathe reduce capacity, measurements such as 'swing over cross slide' or other named parts can be found.

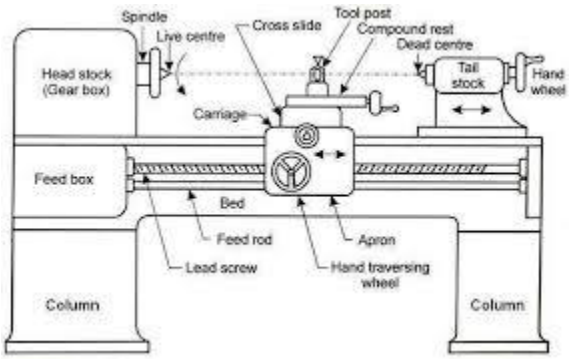
Woodworking

A modern woodworking latheCNC wood latheChess pieces may be manufactured by way of a lathe.

Woodworking lathes are the oldest variety, apart from pottery wheels. All other varieties are descended from these simple lathes. An adjustable horizontal metal rail, the tool-rest, between the material and the operator accommodates the positioning of shaping tools, which are usually hand-held. After shaping, it is common practice to press and slide sandpaper against the still-spinning object to smooth the surface made with the metal shaping tools. The tool-rest is usually removed during sanding, as it may be unsafe to have the operators hands between it and the spinning wood.[citation needed]

Many woodworking lathes can also be used for making bowls and plates. The bowl or plate needs only to be held at the bottom by one side of the lathe. It is usually attached to a metal face plate attached to the spindle. With many lathes, this operation happens on the left side of the headstock, where are no rails and therefore more clearance. In this configuration, the piece can be shaped inside and out. A specific curved tool-rest may be used to support tools while shaping the inside. Further detail can be found on the woodturning page.

Most woodworking lathes are designed to be operated at a speed of between 200 and 1,400 revolutions per minute, with slightly over 1,000 rpm considered optimal for most such work, and with larger workpieces requiring lower speeds.[16]



CHAPTER FOUR

4.1 ROLLER

In mechanical engineering, rollers are cylindrical components that facilitate the movement, alteration, or processing of materials and mechanical parts

Large heavy duty conveyor rollers/drums can be manufactured or refurbished. Typically rollers are manufactured with bossed and keyed shafts, taper locks, and with plain ends or machined ends to suit gearboxes. Rollers with large internal bearings can be overhauled. This work typically involves building up worn areas on shafts, fitting new bearings and seals and fitting new outer shell to roller drum.

Voss Engineering can supply drive rollers with vulcanized rubber lagging or weld on slide lagging. Roller sizes are typically 16" to 18" diameter with shaft sizes ranging from 65mm to 115mm.

4.2 GRINDING WHEEL

Grinding wheels are wheels that contain abrasive compounds for grinding and abrasive machining operations. Such wheels are also used in grinding machines.

The wheels are generally made with composite material. This consists of coarse-particle aggregate pressed and bonded together by a cementing matrix (called the bond in grinding wheel terminology) to form a solid, circular shape. Various profiles and cross sections are available depending on the intended usage for the

wheel. They may also be made from a solid steel or aluminium disc with particles bonded to the surface. Today most grinding wheels are artificial composites made with artificial aggregates, but the history of grinding wheels began with natural composite stones, such as those used for millstones.

The manufacture of these wheels is a precise and tightly controlled process, due not only to the inherent safety risks of a spinning disc, but also the composition and uniformity required to prevent that disc from exploding due to the high stresses produced on rotation.

Grinding wheels are consumables, although the life span can vary widely depending on the use case, from less than a day to many years. As the wheel cuts, it periodically releases individual grains of abrasive, typically because they grow dull and the increased drag pulls them out of the bond. Fresh grains are exposed in this wear process, which begin the next cycle. The rate of wear in this process is usually very predictable for a given application, and is necessary for good performance.

4.3 CUTTING WHEEL

Cutting is the separation or opening of a physical object, into two or more portions, through the application of an acutely directed force.

Implements commonly used for cutting are the knife and saw, or in medicine and science the scalpel and microtome. However, any sufficiently sharp object is capable of cutting if it has a hardness sufficiently larger than the object being cut, and if it is applied with sufficient force. Even liquids can be used to cut things when applied with sufficient force (see water jet cutter).

Cutting is a compressive and shearing phenomenon, and occurs only when the total stress generated by the cutting implement exceeds the ultimate strength of the material of the object being cut. The simplest applicable equation is:

The stress generated by a cutting implement is directly proportional to the force with which it is applied, and inversely proportional to the area of contact.[1] Hence, the smaller the area (i.e., the sharper the cutting implement), the less force is needed to cut something. It is generally seen that cutting edges are thinner for cutting soft materials and thicker for harder materials. This progression is seen from kitchen knife, to cleaver, to axe, and is a balance between the easy cutting action of a thin blade vs strength and edge durability of a thicker blade

4.4 METER READER

Automatic meter reading (**AMR**) is the technology of automatically collecting consumption, diagnostic, and status data from water meter or energy metering devices (gas, electric) and transferring that data to a central database for billing, troubleshooting, and analyzing. This technology mainly saves utility providers the expense of periodic trips to each physical location to read a meter. Another advantage is that billing can be based on near real-time consumption rather than on estimates based on past or predicted consumption. This timely information coupled with analysis can help both utility providers and customers better control the use and production of electric energy, gas usage, or water consumption.

AMR technologies include handheld, mobile and network technologies based on telephony platforms (wired and wireless), radio frequency (RF), or powerline transmission.

4.5 SQUARE RULE

The square rule is a visualization tool that players use to quickly assess if a pawn can promote before the enemy king catches up to it. As the name implies, it works by visualizing a square on the board. The pawn can promote if the opposing king can't step into the square on its next move.

4.6 PIPE RANGE

Nominal Pipe Size (**NPS**) is a North American set of standard sizes for pipes used for high or low pressures and temperatures.[1] "Nominal" refers to pipe in non-specific terms and identifies the diameter of the hole with a non-dimensional number (for example – 2-inch nominal steel pipe" consists of many varieties of steel pipe with the only criterion being a 2.375-inch (60.3 mm) outside diameter). Specific pipe is identified by pipe diameter and another non-dimensional number for wall thickness referred to as the Schedule (Sched. or Sch., for example – "2-inch diameter pipe, Schedule 40"). NPS is often incorrectly called National Pipe Size, due to confusion with the American standard for pipe threads, "national pipe straight", which also abbreviates as "NPS". The European and international designation equivalent to NPS is DN (diamètre nominal/nominal diameter/Nennweite), in which sizes are measured in millimetres, see ISO 6708.[2] The term **NB** (**nominal bore**) is also frequently used interchangeably with DN.

In March 1927 the American Standards Association authorized a committee to standardize the dimensions of wrought steel and wrought iron pipe and tubing. At

that time only a small selection of wall thicknesses were in use: standard weight (STD), extra-strong (XS), and double extra-strong (XXS), based on the iron pipe size (IPS) system of the day. However these three sizes did not fit all applications. Also, in 1939, it was hoped that the designations of STD, XS, and XXS would be phased out by schedule numbers, however those original terms are still in common use today (although sometimes referred to as standard, extra-heavy (XH), and double extra-heavy (XXH), respectively). Since the original schedules were created, there have been many revisions and additions to the tables of pipe sizes based on industry use and on standards from API, ASTM, and others.[3]

Stainless steel pipes, which were coming into more common use in the mid 20th century, permitted the use of thinner pipe walls with much less risk of failure due to corrosion. By 1949 thinner schedules 5S and 10S, which were based on the pressure requirements modified to the nearest BWG number, had been created, and other "S" sizes followed later. Due to their thin walls, the smaller "S" sizes can not be threaded together according to ASME code,[4] but must be fusion welded, brazed, roll grooved, or joined with press fittings.

CHAPTER FIVE

5.1 EXPERIENCED GAINED

1. I was able to gain a first-hand practical experience in Electrical Electronics . I leant that good team work is important for fast and good quality job delivery. I also gained knowledge on how to manage personnel on a site.

2. I understood that proper field survey and inventory are pertinent to good quality desk study/work. I also learnt that good supervision produces good quality outcome of work.

3. I learnt that proper project supervision is essential to produce good quality job. I also learnt that good technical, communication and project management skills are important to ensure completion of a project within budget and stipulated time period.

4. I learnt that proper planning and execution are paramount to the success of a project. Also good environmental consideration should be taken.

5. I gained full experience and attract full knowledge of achievement relating to the drainage construction, earthwork and construction of flexible road pavement.

5.2 PROBLEMS ENCOUNTERED

1. Due to the heavy rainfall, there were days whereby petite activities took place, thus limiting work progress on site.

2. The presence of water pipe within the drainage construction area leading to proper planning, coordination, and transferring of the water pipe in small length away from the drain line, leading to delays in the work progress on site.

3. During my first few weeks, I had difficulties understanding a lot of the terms and terminologies that was used at the office because a lot of them were very new to me. This made it hard for me to follow the procedures.

5.4 RECOMMENDATION

In view of the relevance of the SIWES program, it is important that it is sustained by the government through the Industrial Training Fund (ITF) as it exposes the student to work tools, facilities, and equipment that may not be available in their respective institutions in relation to their course of study.

To this end, I recommend that the following under-listed points should be implemented:

1. Students' Industrial Works Experience Scheme (SIWES) needs to be strengthened by all concerned stakeholder in order for its objectives to be fully realized.
2. Regular monthly allowances for students on attachment should be paid promptly.
3. Organizations should always accept students for SIWES and subsequently assign them to relevant jobs.
4. Experience staff should always be made to train the students on attachment
5. There should be more funding of the scheme by the government in order for it to be more effective.
6. The companies should put in place all the necessary facilities needed to enhance the knowledge of the student in industrial attachment.
7. It will be of great benefit if the institution can create a platform whereby student can obtain pre- Siwes knowledge or excursion programs, before student embark for general 4 months industrial training programme.

5.5 CONCLUSION

In road construction, the preliminary stage must involve a reconnaissance survey, the desk study, oral interview for the people around the proposed road.

A detailed survey of the proposed road site must be carried out for a good vertical and horizontal alignments.

The geotechnical and physio technical investigations of the proposed road site must be given full consideration in the road design and in the preparation of the Bill of Engineering Measurement and Evaluation (BEME). The Bill of Engineering Measurement and Evaluation must contain all necessary items of work in the right quantities.

Electrical electronics engineering, thought very wide, is an interesting field of Engineering. Electrical Electronics Engineering practices are easy in as much the technical know-how is acquired. Every task in life possesses some challenges. So, one must be ever ready to face and solve the problems encountered in any tasks for the benefits of mankind and oneself.

Since this programme is of great importance to student under no circumstance. Should the programme be eradicated because it is indeed a great programme enhance student not only academically but also intellectually.