TECHNICAL REPORT

ON

STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SWES)

UNDERTAKEN AT

L.A FASANSI TECH ENGINEERING WORK
NO 17 OSENI AGEGE SHOFUNTO BUS STOP LAGOS

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BY

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SUBMITTED TO

THE SIWES COORDINATOR, DEPARTMENT OF METTALLUGYCAL ENGINEERING, INSTITUTE OF TECHNOLOGY, KWARA STATE POLYTECHNIC

IN PARTIAL FULFILLMENT OF NATIONAL DIPLOMA IN METTALLUGYCAL ENGINEERING FOR THE AWARD OF NATIONAL DIPLOMA, IN METTALLUGYCAL ENGINEERING KWARA STATE POLYTECHNIC, ILORIN

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CHAPTER ONE

1.1 Introduction

The Students' Industrial Work Experience Scheme (SIWES) is a scheme established by the Industrial Training Fund (ITF) in 1973 to help students of tertiary institution in Nigeria acquire technical skills and practical exposure in an industrial environment based on various course of study.

Prior to the Establishment of SIWES, science and technology education in Nigeria was marred with the problem of lack of adequate practical and industrial skills and working experience that will prepare students of tertiary institution in Nigeria for employment opportunities in industries. It was in this view that the scheme was established and students in tertiary institution of Nigeria studying sciences and technology related courses were mandated to participate in the program to enable them have technical knowledge and working experience before graduating from their prospective institution and makes it a smooth transition from the lecture room to the world of work.

1.2 Background To The Study

SIWES was established by industrial training fund to solve the problem of lack of adequate practical skills in preparation for employment in industries by Nigerian graduates of tertiary institutions.

The Students' Industrial Work Experience Scheme (SIWES) was designed, established and implemented by the Industrial Training Fund (ITF) in 1974 to ensure acquisition of field practical knowledge and skills by students before graduation, mainly coordinated by the National University Commission (NUC).

The NUC recognizing the importance of job specifications in the scheme did set the necessary machinery in motion soon after the resolution was taken in 1998. However, from 1989-1993, the drawing up of the minimum academic standards documents (a major statutory of commission) owe resultant accreditation exercise and the movement of the commission secretariat to Abuja

did not leavesufficient time to actualize this goal.

It was not until January 1996 at a 3 days national workshop in Jos that specification was drawn for the entire program that had industrial attachment component in the minimum academic standard documents. Participants were drawn from senior academic from universities across the country, SIWES coordinators and officers in all nine panels, each headed by a senior academic officer were constituted for the entire forty-six program. Prior to drawing job specification, however, a one-day meeting was held at which a five-day meeting was presented and the procedure content and format for presentation of the specification documents were decided.

SIWES commenced in 1974 in the aim of making education more relevant to bridge the gap between the theory and the practice of agriculture, engineering, technology and science related discipline in tertiary institutions in Nigeria.

For students in polytechnics and mono-technics and college of education, the duration of SIWES is for 4 months while university undergraduates go for a 6 months duration. Each institution is expected to have a SIWES coordinator who is in charge of all activities that pertains to students industrial training in the institution.

The production of SIWES job specification is without doubt a milestone in the development of academic activities in the national university system. The benefit derivable by the employer, universities and the students alike are immense and will go along way to move the country forward technologically.

Operators: The ITF, the coordinating agencies (NUC, NCCE, NBTE), the employers of labor and institution.

Funding: The Federal Government of Nigeria.

Beneficiaries: Undergraduate students of the following; Agriculture, Engineering, Technology, Environmental, Sciences, Education, Medical sciences and Pure and applied sciences.

Objectives Of Siwes

1. It provides students the opportunity to test their interest in a particular career before permanent commitments are made.
2. It provides an avenue for students in tertiary institutions to acquire industrial skills and work experience in their course of study.
3. Makes the transition from school to the world of work easier and enhances students contacts for later job placement.
4. It helps students to develop skills and techniques directly applicable to their careers.
5. It provides students the opportunity to understand informal organizational interrelationships.
6. It helps students develop skills in the application of theory to practical work situations.
7. It increases a student's sense of responsibilities
8. It prepares students to enter into full time employment in their area of specialization upon graduation.
9. It provides students the opportunity to develop attitudes conducive to effective interpersonal relationships.

CHAPTER TWO

OBJECTIVES AND CORE VALUES OF THE ESTABLISHMENT

The core value of the Objectives of Metallurgical Engineering:

1. Extraction and Processing of Metals: To extract metals from ores and process them into usable forms.

2. Material Selection and Development: To select and develop materials with specific properties for various applications.

3. Quality Control and Assurance: To ensure the quality of metals and materials through testing, inspection, and certification.

4. Recycling and Sustainability: To develop sustainable and environmentally friendly methods for metal extraction, processing, and recycling.

5. Research and Development: To advance the field of metallurgical engineering through research and development of new materials, processes, and technologies.

Core Values of Metallurgical Engineering:

1. Innovation: Metallurgical engineers strive to develop new and innovative materials, processes, and technologies.

2. Quality: Metallurgical engineers prioritize quality in the extraction, processing, and application of metals and materials.

3. Sustainability: Metallurgical engineers aim to develop sustainable and environmentally friendly methods for metal extraction, processing, and recycling.

4. Collaboration: Metallurgical engineers work collaboratively with other professionals, including materials scientists, chemists, and engineers, to advance the

field.

5. Continuous Learning: Metallurgical engineers stay up-to-date with the latest developments and advancements in the field through ongoing education and professional development.

6. Safety: Metallurgical engineers prioritize safety in the extraction, processing, and application of metals and materials.

7. Efficiency: Metallurgical engineers strive to optimize processes and systems to improve efficiency and reduce waste.

ORGANIZATIONAL STRUCTURE OF ESTABLISHMENT

THE VARIOUS DEPARTMENTS AND UNITS EDITORIAL DEPARTMENT

Organizational Structure of Metallurgical Engineering:

The organizational structure of metallurgical engineering typically includes:

1. Top Management

- Director/Head of Department: Oversees the overall strategy and direction of the metallurgical engineering department.

- Deputy Director/Assistant Head: Assists the director/head in managing the department.

2. Departments

- Extraction and Processing Department: Responsible for the extraction and processing of metals from ores.

- Materials Science and Engineering Department: Focuses on the development and application of materials with specific properties.

- Quality Control and Assurance Department: Ensures the quality of metals and materials through testing, inspection, and certification.

- Research and Development Department: Conducts research and development of new materials,

processes, and technologies.

- Recycling and Sustainability Department: Develops sustainable and environmentally friendly methods for metal extraction, processing, and recycling.

3. Sub-Departments

- Metallurgical Laboratory: Conducts testing, analysis, and research on metals and materials.

- Process Engineering Department: Designs and optimizes processes for metal extraction and processing.

- Materials Characterization Department: Analyzes and characterizes the properties of materials.

Various Departments at Metallurgical Engineering:

1. Metallurgical Engineering Department

- Ferrous Metallurgy Department: Focuses on the extraction and processing of iron and steel.

- Non-Ferrous Metallurgy Department: Focuses on the extraction and processing of non-ferrous metals such as aluminum, copper, and zinc.

2. Materials Science and Engineering Department

- Materials Development Department: Develops new materials with specific properties.

- Materials Characterization Department: Analyzes and characterizes the properties of materials.

3. Quality Control and Assurance Department

- Testing and Inspection Department: Conducts testing and inspection of metals and materials.

- Certification Department: Certifies metals and materials for quality and compliance.

4. Research and Development Department

- Research Laboratory: Conducts research on new materials, processes, and technologies.

- Development Department: Develops new materials, processes, and technologies.

5. Recycling and Sustainability Department

- Recycling Department: Develops sustainable methods for metal recycling.
- Sustainability Department: Focuses on reducing the environmental impact of metal extraction, processing, and recycling.

CHAPTER THREE

ACTUAL WORKDONE WITH EXPERIENCE GAINED

During my Students Industrial Working Experience Scheme (SIWES) at the organization, we were able to learn and gain a lot of industrial and organizational experience as goes:

Welding machine and uses

A welding machine is a device used to join two or more metal pieces together by applying heat, pressure, or both, with or without filler metal, to produce a strong and permanent bond.

Types of Welding Machines:

1. Shielded Metal Arc Welding (SMAW) Machine: Also known as stick welding, uses a consumable electrode covered in flux to protect the arc and molten metal.

2. Gas Metal Arc Welding (GMAW) Machine: Also known as MIG (Metal Inert Gas) welding, uses a continuous wire electrode and an inert gas to shield the arc.

3. Gas Tungsten Arc Welding (GTAW) Machine: Also known as TIG (Tungsten Inert Gas) welding, uses a non-consumable tungsten electrode and an inert gas to shield the arc.

4. Flux Cored Arc Welding (FCAW) Machine: Uses a special electrode that produces a flux to shield the arc and molten metal.

5. Submerged Arc Welding (SAW) Machine: Uses an electrical arc to melt the metal, and the weld area is submerged in a flux to protect it from the atmosphere.

6. Resistance Spot Welding (RSW) Machine: Uses electrical resistance to heat the metal and form a weld.

7. Laser Beam Welding (LBW) Machine: Uses a high-powered laser beam to melt and join the metal.

Uses of Welding Machines:

1. Construction: Welding machines are used in the construction industry for building frameworks, bridges, and other structures.

2. Manufacturing: Welding machines are used in various manufacturing industries, such as automotive, aerospace, and shipbuilding.

3. Repair and Maintenance: Welding machines are used for repairing and maintaining equipment, machinery, and structures.

4. Art and Sculpture: Welding machines are used by artists and sculptors to create metal artworks.

5. Automotive: Welding machines are used in the automotive industry for manufacturing and repairing vehicles.

6. Aerospace: Welding machines are used in the aerospace industry for manufacturing and repairing aircraft and spacecraft.

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1) Lathe Machine Operations

Lathe Machine Operations:

1. Turning: Removing material from the workpiece to create a cylindrical shape.

2. Facing: Machining the end of the workpiece to create a flat surface.

3. Drilling: Creating holes in the workpiece using a drill bit.

4. Boring: Enlarging existing holes in the workpiece.

5. Tapping: Creating threads in the workpiece using a tap.

6. Knurling: Creating a textured surface on the workpiece.

7. Parting: Cutting off the workpiece from the stock material.

Lathe Tools:

1. Turning Tools: Used for turning operations, such as roughing and finishing.

2. Facing Tools: Used for facing operations, such as facing and squaring.

3. Drilling Tools: Used for drilling operations, such as twist drills and center drills.

4. Boring Tools: Used for boring operations, such as boring bars and cutter bits.

5. Tapping Tools: Used for tapping operations, such as tap holders and tap wrenches.

6. Knurling Tools: Used for knurling operations, such as knurling wheels and knurling cutters.

7. Parting Tools: Used for parting operations, such as parting tools and cutoff tools.

Additional Examples of Lathe Tools:

1. Roughing Tools: Used for removing large amounts of material quickly.

2. Finishing Tools: Used for creating a smooth finish on the workpiece.

3. Form Tools: Used for creating complex shapes and profiles on the workpiece.

4. Threading Tools: Used for creating threads on the workpiece.

5. Grooving Tools: Used for creating grooves and recesses on the workpiece.

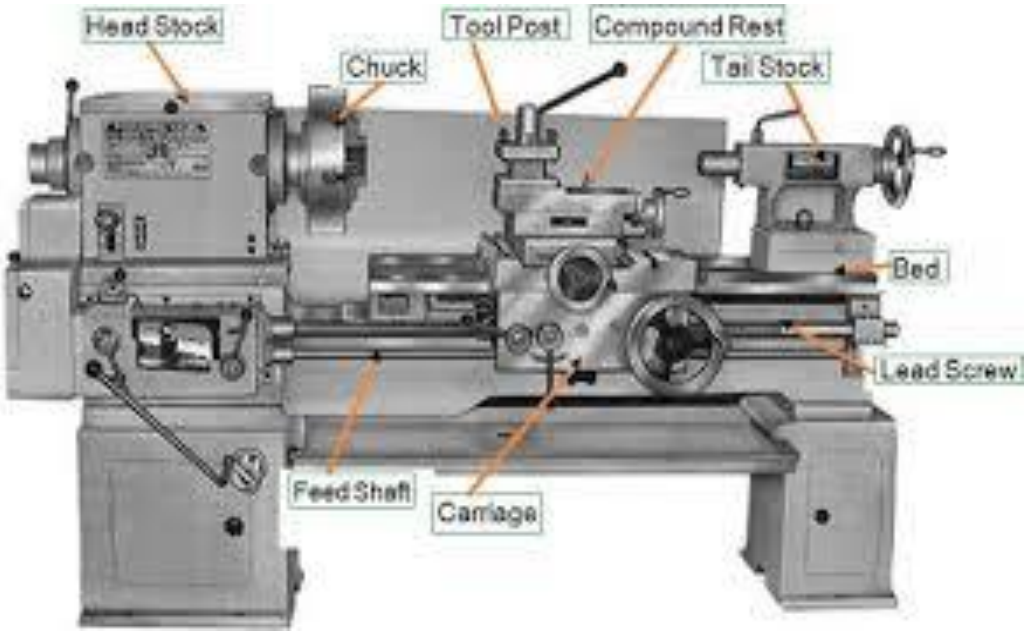
6. Cutoff Tools: Used for cutting off the workpiece from the stock material.

7. Center Drills: Used for creating a center hole in the workpiece.

8. Spot Drills: Used for creating a small hole in the workpiece for drilling or tapping.

9. Reamers: Used for enlarging existing holes in the workpiece.

10. Chamfer Tools: Used for creating a chamfer or bevel on the workpiece.



Drilling machine

A drilling machine is a type of machine tool used to create holes in various materials, such as metal, wood, and plastic, by rotating a drill bit at high speed.

Safety Equipment for Metallurgical Engineering:

1. Personal Protective Equipment (PPE): Hard hats, safety glasses, gloves, respirators, and steel-toed boots.

2. Fire Protection Equipment: Fire extinguishers, fire alarms, and fire-resistant clothing.

3. Fall Protection Equipment: Harnesses, lanyards, and carabiners.

4. Electrical Safety Equipment: Insulated gloves, voltage testers, and lockout/tagout devices.

5. Chemical Safety Equipment: Chemical-resistant gloves, goggles, and face shields.

6. Ventilation Systems: Fume hoods, exhaust fans, and ventilation ducts.

7. Noise Protection Equipment: Earplugs, earmuffs, and noise-reducing headphones.

8. Ergonomic Equipment: Anti-fatigue mats, ergonomic chairs, and lifting equipment.

9. First Aid Kits: First aid supplies, such as bandages, antiseptic wipes, and pain relievers.

10. Emergency Response Equipment: Emergency showers, eyewash stations, and

fire blankets.

Specialized Safety Equipment for Metallurgical Engineering:

1. Heat-Resistant Clothing: Heat-resistant suits, gloves, and face shields.
2. Molten Metal Protection: Molten metal shields, heat-resistant gloves, and face shields.
3. Chemical-Resistant Suits: Chemical-resistant suits, gloves, and face shields.
4. Respiratory Protection: Respirators, gas masks, and breathing apparatus.
5. Fall Protection Equipment for Heights: Harnesses, lanyards, and carabiners for working at heights.

Safety Equipment for Specific Metallurgical Processes:

1. Blast Furnace Safety Equipment: Heat-resistant clothing, helmets, and face shields.
2. Electric Arc Furnace Safety Equipment: Heat-resistant clothing, helmets, and face shields.
3. Casting Safety Equipment: Heat-resistant clothing, gloves, and face shields.
4. Forging Safety Equipment: Heat-resistant clothing, gloves, and face shields.
5. Grinding and Polishing Safety Equipment: Safety glasses, gloves, and face shields.

CHAPTER FOUR

ACTUAL WORKDONE WITH EXPERIENCE GAINED

(Cont'd)

Sledge hammer

Definition of a Sledge Hammer:

A sledge hammer is a large, heavy hammer used for breaking, shaping, and demolishing objects. It typically consists of a long handle attached to a heavy metal head, which can weigh anywhere from a few pounds to over 20 pounds (9 kg).

Characteristics of a Sledge Hammer:

1. Heavy Metal Head: The head of a sledge hammer is typically made of steel or iron and is designed to deliver a powerful blow.

2. Long Handle: The handle of a sledge hammer is typically long, allowing the user to generate significant force and momentum.

3. Balanced Design: A sledge hammer is designed to be balanced, making it easier to swing and control.

Uses of a Sledge Hammer:

1. Demolition: Sledge hammers are often used for demolishing walls, breaking up concrete, and other heavy-duty demolition work.

2. Breaking Up Objects: Sledge hammers can be used to break up objects such as rocks, concrete, and metal.

3. Shaping and Forming: Sledge hammers can be used to shape and form metal, stone, and other materials.

4. Driving Stakes: Sledge hammers can be used to drive stakes into the ground.

Types of Sledge Hammers:

1. Standard Sledge Hammer: A standard sledge hammer has a flat, rectangular head.

2. Ball Peen Sledge Hammer: A ball peen sledge hammer has a rounded, ball-shaped head.

3. Spike Sledge Hammer: A spike sledge hammer has a pointed, spike-shaped head.

4. Maul: A maul is a type of sledge hammer with a large, flat head and a long handle.College."

WATCH FOR THE UNEXPECTED

No matter how it was sold, sometimes what you expected would be the most important story of a live event turns out to be dull: a non-event. Perhaps a side story—a protest or something said unexpectedly by someone noteworthy—rises to center stage and becomes the better story. Grasp it.

Keep your ears and eyes tuned and your mind open. Be willing to shift your focus, start over and reorganize.

CHAPTER FIVE
SUMMARY AND CONCLUSION

Summary Of Attachment Activities

This is a complete report of an industrial training program carried out during my SIWES (2024 at L.AFASANSI TECH. Activities including field work such as news writing and report, different types of WORS and so on.

The experience gained has given me a sound knowledge on media house in general which has helped prepare me for the future journalism work.

PROBLEMS ENCOUNTERED

The success of my training is undisputed, but it was not devoid of rough edges.I experienced some challenges, among these are:

- The issue of expensive transportation: I have to pay an average of 500 naira every day for transport without remuneration.
- Every member of staff was now depending on me to carry out assignments when there were other hands. This made me work overtime sometimes & it was favorable coming back late to a family house.
- The bureaucratic system is rigid and before things are done its takes so much time. This affected the conducive working environment for the members of staff in that whenever machines are bad and need repairs it takes so much time before it gets attended to. This system made work so tedious and cumbersome.

SUGGESTIONS FOR IMPROVEMENT OF THE SCHEME

- Visiting of students during the program should be ensured by the ITF
- Students should be paid their allowance on time to ensure motivation
- Selection of placement should not be left to students. Polytechnics shouldmake a means of allocating students to related companies

- Seminars should be organized for establishments to acquaint them withtheir roles towards students on training
- Government should participate fully in the provision of equipment in the placement centers

CONCLUSION

The period has contributed immensely to my academic experience. Students Industrial Working Experience Scheme (SIWES) is an important program for all students. It helps in tackling the issue of unemployment amongst youth as it teaches us way to be

independent. The exercise made me understood part of what is expected as a journalist in the practice. It helped groom my relationship skills especially in areas where team work are required and communicating with the staffs and students alike. It has exposed me to work ethics and routines.

The problems, if not tackled, will make it lose its usefulness and vitality notwithstanding the benefits of it.

Finally, I do hope the program will be improved so as to enhance manpower development and student's skill in their respective field of study.