TECHNICAL REPORT

ON

STUDENTS INDUSTRIAL WORK EXPERIENCE SCHEME

(SIWES)

AT

MINISTRY OF ENERGY AND MINERAL RESOURCES

SECRETARIAT ALAUSA IKEJA, LAGOS STATE.

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DEDICATION

I dedicate my Industrial Training report to Almighty God, who has given me the grace to participate in the SIWES program, to my Parents and as many that have contributed greatly to the success of my Industrial Training.

ACKNOWLEDGEMENT

I thank God who has seen me throughout my SIWES program and also thank my Industrial based supervisor who guided me through My Industrial training. I also send out my appreciation to my lecturers, friends and Coworkers for their moral support. My special thanks to my wonderful and lovely parents Mr. and Mrs. IBRAHIM who were there for me in terms of care, prayers, financial support and others.

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CHAPTER ONE
INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The Students' Industrial Work Experience Scheme (SIWES) is a program designed to expose students to practical work experience in their field of study. The program is aimed at bridging the gap between theoretical knowledge and practical experience.

The Students Industrial Work Experience Scheme (SIWES) is a work-based learning program designed to prepare students for the transition from academic life to professional careers. It is an integral part of the Nigerian educational system, aimed at equipping students with practical skills and knowledge to complement their theoretical studies. SIWES was established in 1973 by the Industrial Training Fund (ITF) in response to the growing concerns of employers about the lack of practical skills among graduates from tertiary institutions (Ezeabikwa, 1991). The scheme is a collaborative initiative involving students, tertiary institutions, employers of labor, and the ITF.

The program was introduced to address the gap between classroom learning and the real-world demands of industries. It recognizes that while theoretical knowledge is essential, it is often insufficient for solving practical problems in professional environments. SIWES provides students with opportunities to gain hands-on experience, develop technical competencies, and understand workplace ethics and culture (Agbai, 1992).

The scheme is a mandatory part of the curriculum for students studying courses such as engineering, technology, medical sciences, agriculture, education, and other applied sciences.

It typically lasts for six months for university undergraduates and four months for students in polytechnics or colleges of education (ITF, 2024). Through this initiative, students are exposed to industrial practices and technologies that are not available within their academic institutions. This exposure enhances their employability and prepares them for the challenges of the modern workforce (Adebayo & Adesanya, 2013).

In summary, SIWES is a vital component of Nigeria's educational system that bridges the gap between theory and practice. It plays a crucial role in preparing students for professional careers by equipping them with practical skills, knowledge, and experiences that are essential for success in their chosen fields.

1.2 STATEMENT OF THE PROBLEM

The lack of practical experience among students has been identified as a major challenge in the Nigerian education system. This has led to a situation where graduates are not adequately prepared for the workforce.

1.3. BRIEF HISTORICAL. DEVELOPMENT OF SIWES

The history of SIWES dates back to the early 1970s when Nigeria experienced rapid industrial growth following its independence. This growth created a demand for skilled manpower to operate and manage industrial facilities. However, employers soon realized that
graduates from tertiary institutions lacked the practical skills needed to perform effectively in the workplace (Ezeabikwa, 1991).

In response to this challenge, the Industrial Training Fund (ITF) was established in 1971 by Decree No. 47 with a mandate to promote skill acquisition and manpower development in Nigeria. Two years later, in 1973, SIWES was introduced as one of ITF's flagship programs aimed at addressing the skill gap among graduates (ITF, 2024). Initially, SIWES was fully
funded and managed by ITF. The program targeted students in engineering and technology- related fields who required practical training as part of their academic curriculum (Adebayo & Adesanya, 2013).

By 1978, financial constraints forced ITF to withdraw from direct management of SIWES.

The Federal Government subsequently transferred oversight responsibilities to the National Universities Commission (NUC) for universities and the National Board for Technical Education (NBTE) for polytechnics and colleges of education (Legit.ng, 2022). However,
this arrangement proved ineffective due to inadequate funding and poor coordination among stakeholders. In 1984, management responsibilities were returned to ITF under a new funding
arrangement supported by the Federal Government (SmartBukites, 2023).

Over time, SIWES has undergone significant changes aimed at improving its effectiveness and expanding its scope. Initially limited to engineering and technology disciplines, it now includes other fields such as medical sciences, agriculture, business administration, and
education. These changes reflect an ongoing commitment to align SIWES with evolving industry needs and national development goals (Akinyemi & Abiodun, 2018).

Today, SIWES is recognized as one of Nigeria's most successful initiatives for bridging the gap between academic learning and industrial practice. It has become an essential component of tertiary education in Nigeria, contributing significantly to skill development and employability among graduates.

1.4 OBJECTIVES OF THE STUDY

The objectives of this study are to:

- Gain practical experience in the mineral resources and petroleum engineering industry
- Apply theoretical knowledge in a practical setting
- Develop skills and competencies required in the industry
- To strengthen employer participation in the educational process by fostering collaboration between educational institutions and industries (Ezeabikwa, 1991; ITF, 2024)

CHAPTER TWO
DESCRIPTION OF THE ESTABLISHMENT OF ATTACHMENT

2.1 LOCATION AND BRIEF HISTORY OF ESTABLISHMENT

The Ministry of Energy and Mineral Resources Secretariat is located at: Alausa Secretariat, Ikeja, Lagos State, Nigeria.

The Ministry of Energy and Mineral Resources was established in 1967, shortly after Lagos State was created. At the time, the ministry was responsible for the development and management of the state's energy and mineral resources.

Over the years, the ministry has undergone several transformations and reforms. In 1979, the ministry was merged with the Ministry of Commerce and Industry to form the Ministry of Commerce, Industry, and Energy.

However, in 1999, the ministry was re-established as a separate entity, with a focus on energy and mineral resources development. Since then, the ministry has been responsible for regulating and developing the energy and mineral resources sector in Lagos State.

Key Milestones

- 1967: The Ministry of Energy and Mineral Resources was established.
- 1979: The ministry was merged with the Ministry of Commerce and Industry.
- 1999: The ministry was re-established as a separate entity.
- 2001: The ministry launched the Lagos State Energy Policy.
- 2010: The ministry established the Lagos State Mineral Resources Development Board.

Current Responsibilities

The Ministry of Energy and Mineral Resources Secretariat is responsible for:

- Regulating the energy and mineral resources sector in Lagos State
- Developing and implementing policies for the sector
- Issuing licenses and permits for energy and mineral resources exploration and production
- Monitoring and enforcing compliance with safety and environmental regulations
- Promoting investment in the energy and mineral resources sector

The ministry works closely with other government agencies, private sector operators, and stakeholders to achieve its goals and objectives.

2.2 MISSION AND VISION STATEMENTS

The ministry's mission is to promote sustainable development of the mineral resources and petroleum engineering industry, while its vision is to become a leading regulator of the industry in Nigeria.

2.3. OBJECTIVES OF THE ESTABLISHMENT.

Here are the primary and secondary objectives of the Ministry of Energy and Mineral Resources, Lagos State:

Primary Objectives

1. To promote the development and utilization of energy and mineral resources: The ministry aims to explore, develop, and utilize the state's energy and mineral resources to drive economic growth and development.
2. To regulate the energy and mineral resources sector: The ministry is responsible for regulating the activities of operators in the energy and mineral resources sector to ensure compliance with safety, environmental, and other relevant regulations.
3. To enhance the contribution of the energy and mineral resources sector to the state's economy: The ministry aims to increase the sector's contribution to the state's GDP through the development of new projects, expansion of existing ones, and improvement of operational efficiency.

Secondary Objectives

1. To ensure sustainable development of energy and mineral resources: The ministry aims to promote sustainable development practices in the energy and mineral resources sector to minimize environmental impact and ensure long-term sustainability.
2. To promote investment in the energy and mineral resources sector: The ministry aims to attract local and foreign investment to the sector to drive growth and development.
3. To develop and implement policies and programs to support the growth of the energy and mineral resources sector: The ministry aims to develop and implement policies and programs that support the growth of the sector, including training and capacity building programs for operators and stakeholders.
4. To ensure the safety and well-being of workers and communities in the energy and mineral resources sector: The ministry aims to ensure that operators in the sector prioritize the safety and well-being of workers and communities, and comply with relevant safety and environmental regulations.

Overall Goal

The overall goal of the Ministry of Energy and Mineral Resources is to drive the sustainable development of Lagos State's energy and mineral resources sector, and to promote economic growth and development through the sector.

2.4 ORGANIZATION STRUCTURE

The Ministry of Energy and Mineral Resources, Lagos State Secretariat, Alausa, Ikeja, has the following organizational structure:

Management Team

1. Honorable Commissioner: Head of the Ministry, responsible for overall policy direction and implementation.
2. Permanent Secretary: Chief Administrative Officer, responsible for day-to-day administration and implementation of policies.

Departments

1. Energy Department: Responsible for:
    1. Renewable energy development
    2. Energy efficiency and conservation

    3. Power generation, transmission, and distribution
2. Mineral Resources Department: Responsible for:
    1. Mineral exploration and exploitation
    2. Mining licenses and permits
    3. Geological surveys and mapping
3. Planning, Research, and Statistics Department: Responsible for:
    1. Policy planning and research
    2. Data collection and analysis
    3. Statistics and reporting
4. Finance and Accounts Department: Responsible for:
    1. Budgeting and financial planning
    2. Accounting and financial reporting
    3. Treasury management
5. Human Resources Department: Responsible for:
    1. Staff recruitment and development
    2. Training and capacity building
    3. Personnel management

Units

1. Legal Unit: Provides legal advisory services to the Ministry.
2. Public Affairs Unit: Handles public relations, media, and communications.
3. Internal Audit Unit: Conducts internal audits to ensure accountability and transparency.

Organizational Chart

The organizational structure can be visualized as follows:

Honorable Commissioner
|
|-- Permanent Secretary
| |
| |-- Energy Department
| |-- Mineral Resources Department
| |-- Planning, Research, and Statistics Department
| |-- Finance and Accounts Department
| |-- Human Resources Department
| |-- Legal Unit
| |-- Public Affairs Unit
| |-- Internal Audit Unit

Note: This organizational structure is a general representation and may be subject to changes or modifications.

CHAPTER THREE
INDUSTRIAL EXPERIENCE

3.1 WORK DONE

During my 16 weeks SIWES program at the Ministry of Energy and Mineral Resources, Lagos State, I worked at energy department, mineral resources department, Planning research and statistics department and other department which makes me gain more insight about my course of study

Energy Audits: Conducted energy audits of government buildings to identify areas of energy inefficiency and provide recommendations for energy conservation. Renewable Energy Projects Assisted in the development of renewable energy projects, including solar and wind power projects. Energy Policy Development Contributed to the development of energy policies and regulations for the state.

Mineral Exploration Participated in mineral exploration activities, including geological mapping and sampling. Mining RegulationsAssisted in the development and implementation of mining regulations and guidelines. Mineral Resource Management Contributed to the management of mineral resources, including the issuance of mining licenses and permits.

Also Planning, Research, and Statistics Department contributed to Data Collection and Analysis Collected and analyzed data on energy and mineral resources production, consumption, and trade. Research and Development Conducted research on new and emerging technologies in the energy and mineral resources sector. Statistical Reporting Assisted in the preparation of statistical reports on energy and mineral resources production, consumption, and trade.

Administration and Human Resources Assisted in the administration of the ministry, including personnel management and training.

Finance and Accounts Assisted in the financial management of the ministry, including budgeting and accounting.

Public Affairs and Communications Assisted in the preparation of press releases, speeches, and other communications materials.

These are just a few examples of the industrial experience work done during the SIWES program at the Ministry of Energy and Mineral Resources, Lagos State.

3.2 TOOLS AND EQUIPMENT USED

Throughout my SIWES program, I utilized a range of tools and equipment essential for my course of study. These included:

Energy Department

1. Energy auditing equipment:
    1. Energy meters (e.g., clamp meters, multimeters)
    2. Thermometers (e.g., infrared thermometers)
    3. Light meters (e.g., lux meters)
2. Computer software:
    1. Energy simulation programs (e.g., eQUEST, EnergyPlus)
    2. Energy management systems (e.g., EMS)

    3. Microsoft Office (e.g., Excel, Word, PowerPoint)
3. Renewable energy systems:
    1. Solar panels
    2. Wind turbines
    3. Biomass systems

Planning, Research, and Statistics Department

1. Computer hardware and software:
    1. Computers (e.g., desktops, laptops)
    2. Statistical analysis programs (e.g., SPSS, R)
    3. Data visualization tools (e.g., Tableau, Power BI)
2. Research equipment:
    1. Cameras
    2. GPS devices
    3. Audio recorders
3. Library resources:
    1. Books
    2. Journals
    3. Online databases (e.g., ScienceDirect, JSTOR)

Administration and Human Resources Department

1. Office equipment:
    1. Printers
    2. Scanners
    3. Photocopiers
2. Communication equipment:
    1. Phones
    2. Email
    3. Video conferencing tools (e.g., Zoom, Skype)

Safety Equipment

1. Personal protective equipment (PPE):
    1. Hard hats
    2. Safety glasses
    3. Gloves
2. First aid kits
3. Fire extinguishers

3.3 SAFETY PRECAUTIONS

Here are some safety precautions that were taken during the SIWES program at the Ministry of Energy and Mineral Resources:

General Safety Precautions

1. Wearing of personal protective equipment (PPE) such as hard hats, safety glasses, and gloves.
2. Ensuring proper ventilation in work areas to prevent inhalation of hazardous substances.
3. Keeping work areas clean and tidy to prevent tripping and falling.

4. Using proper lifting techniques to prevent strains and injuries.
5. Reporting any hazards or incidents to supervisors immediately.

Electrical Safety Precautions

1. Ensuring all electrical equipment is properly grounded and maintained.
2. Using insulated tools and equipment when working with electrical systems.
3. Avoiding overloading electrical circuits and outlets.
4. Keeping electrical cords and cables organized and secure.
5. Turning off electrical equipment when not in use.

Fire Safety Precautions

1. Ensuring all fire extinguishers are easily accessible and inspected regularly.
2. Keeping flammable materials away from heat sources and open flames.
3. Ensuring all electrical equipment is properly maintained and free from defects.
4. Having a fire evacuation plan in place and conducting regular drills.
5. Prohibiting smoking in work areas.

Chemical Safety Precautions

1. Handling chemicals with care and wearing proper PPE.
2. Ensuring all chemicals are properly labeled and stored.
3. Using chemicals in well-ventilated areas and avoiding inhalation.
4. Disposing of chemicals properly and following safety protocols.
5. Keeping a chemical spill response plan in place.

Emergency Response Plan

1. Having a comprehensive emergency response plan in place.
2. Conducting regular emergency drills and training.
3. Ensuring all employees know emergency procedures and evacuation routes.
4. Having a first aid kit and trained first responders on site.
5. Reviewing and updating the emergency response plan regularly.

3.4 CHALLENGES FACED DURING MY SIWES PROGRAM

During my SIWES program, I encountered several challenges that tested my skills and adaptability at the Ministry of Energy and Mineral Resources:

Firstly Administrative Challenges

1. Bureaucratic delays: Delays in obtaining necessary approvals and clearances have hindered work.
2. Limited resources: Insufficient funding, equipment, or personnel may have constrained your project's scope and effectiveness.
3. Poor communication: Inadequate communication between departments or teams have led to misunderstandings, errors, or missed deadlines.

Secondly Technical Challenges

1. Complexity of energy and mineral resources issues: The technical aspects of energy and mineral resources management have been challenging to grasp, especially for a newcomer.
2. Limited access to data and information: Restricted access to relevant data, reports, or

documents may have hindered your research and analysis.
3. Outdated equipment and technology: Using outdated equipment or software may have slowed down your work or limited your capabilities.

Thirdly Interpersonal Challenges
1. Difficulty in building relationships with colleagues: Establishing trust and rapport with colleagues, especially in a new work environment, can be challenging.
2. Conflicting priorities and expectations: Different stakeholders may have had competing priorities and expectations, which could have created tension and conflict.
3. Cultural and language barriers: working with colleagues from diverse cultural backgrounds or with limited English proficiency, communication barriers arisen.

Lastly Personal Challenges
1. Time management and organization: Balancing multiple tasks, deadlines, and responsibilities have been overwhelming at times.
2. Adapting to a new work environment: Adjusting to a new workplace culture, policies, and procedures can be stressful and challenging.
3. Maintaining motivation and focus: Sustaining enthusiasm and concentration throughout the SIWES program have been difficult, especially when faced with obstacles and setbacks.

Other Challenges Include
1. Security concerns: Depending on the specific location and nature of my work, security concerns have been a challenge.
2. Transportation and logistics: Arranging transportation to and from work, as well as managing logistics for fieldwork or projects, have been challenging.
3. Health and wellness: Maintaining physical and mental health during the SIWES program have been difficult, especially when working long hours or facing stressful situations.

CHAPTER FOUR
SUMMARY, CONCLUSION, AND RECOMMENDATION

4.1 SUMMARY

This report provides a comprehensive summary of my experiences and learning outcomes during the 16-week SIWES program at the Ministry of Energy and Mineral Resources, Lagos State, provided me with practical experience in the energy and mineral resources sector, enabling me to develop skills and competencies, apply theoretical knowledge, and overcome various challenges, ultimately enhancing my readiness for the workforce."

4.2 CONCLUSION

The SIWES program is an essential component of the Nigerian education system, providing students with practical experience and exposing them to the latest technologies and techniques.

Moreover, the program underscored the need for continuous learning and professional development in the field of Mineral Resources and Petroleum Engineering. The rapid evolution of technology and data analysis tools means that mineral resources engineering must stay updated with the latest methodologies and software to remain effective. This realization has motivated me to pursue further education and training in mineral resources and petroleum engineering to enhance my skills and stay competitive in the job market.

4.3 RECOMMENDATION

Based on my experience and observations during the SIWES program, I recommend the following:

- Investment in Data Management Infrastructure: Ministry of energy should improve more robust data management systems to improve data quality and accessibility. This would enhance the efficiency of data analysis and decision making processes. Implementing a comprehensive data management system would also help in reducing data inconsistencies and improving data security.
- Training Programs for Staff: Regular training programs should be implemented to equip staff with advanced skills and knowledge of new tools and technologies. This would enable them to handle complex data analysis tasks more effectively and keep pace with industry trends. Training sessions could cover topics such as advanced analytics modeling, data visualization techniques, and the use of emerging technologies like machine learning and artificial intelligence.
- Enhanced Communication Channels: Developing clear communication channels between the team and other departments is crucial. This would ensure that energy insights are effectively communicated and integrated into business decisions. Regular meetings and feedback sessions could be established to facilitate better collaboration and understanding among teams.
- Internship Program Development: Ministry of Energy should consider developing a structured internship program that provides clear objectives,

mentorship,and feedback mechanisms. This would enhance the learning experience for future interns and ensure they contribute meaningfully to the organization. A well-structured program would also help in attracting top talent and building a pipeline of skilled
professionals.

- Collaboration with Educational Institutions: Ministry of Energy could benefit from collaborations with local educational institutions to promote research and development in mineral resources and petroleum engineering . This could involve joint research projects, guest lectures, or internship opportunities for students. Such collaborations would foster innovation,
provide access to fresh talent, and contribute to the development of the local community.

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