A TECHNICAL REPORT
STUDENT INDUSTRIAL WORKING EXPERIENCE SCHEME
(SIWES)

Held at
AJIBOLA ALADE CLINIC & MATERNITY
Oke Oyi, Ilorin

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DEDICATION

I dedicate this technical report to the Almighty, the giver of knowledge, wisdom and who is rich in mercy.

ACKNOWLEDGEMENT

All adoration and glory are due to the Almighty for His Love, guidance and protection. I thank him for the perfect health, wisdom, knowledge, strength and opportunity to complete this stage of Academic in peace.

My Profound gratitude goes to my, Parents and every individual that supported me throughout the Student Industrial Work Experience. thanks so much for your support and care.

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CHAPTER ONE

1.1 INTRODUCTION TO SIWES

The Students Industrial Work Experience Scheme (SIWES) is a training program aimed at equipping students from universities, polytechnics, colleges of technology, agriculture, and education with practical skills. It prepares them for the industrial work environment they are likely to encounter after graduation. The program allows students to gain hands-on experience with equipment and machinery that may not be accessible within their academic institutions.

1.2 HISTORY OF SIWES

The Students' Industrial Work Experience Scheme (SIWES) was established in 1973 by the Federal Government of Nigeria through the Industrial Training Fund (ITF) to address the gap between theoretical knowledge and practical application in graduates of tertiary institutions. The program was developed to provide practical training that equips students from universities, polytechnics, and colleges of education with the skills needed for real-world work environments they are likely to encounter after graduation. Prior to the scheme's creation, industrialists raised concerns that graduates lacked sufficient practical experience to meet the demands of the workforce. Employers believed that the theoretical focus of education in higher institutions did not align with the practical needs of industries.

With the increasing enrollment in higher education, managing and funding the scheme became challenging. As a result, ITF withdrew from the program in 1978, and its administration was transferred to the Federal Government, which delegated responsibilities to the National Universities Commission (NUC), the National Board for Technical Education (NBTE), and the National Commission for Colleges of Education (NCCE). In 1984, the Federal Government reassigned the program to ITF, which officially resumed control in 1985, with funding support provided by the Federal Government.

1.3 OBJECTIVES OF THE PROGRAMME

The primary objectives of the Students' Industrial Work Experience Scheme (SIWES) are as follows:

- Facilitate industrial placements for students of tertiary institutions, approved by regulatory bodies such as the NUC, NBTE, and NCCE, to help them gain practical skills relevant to their academic disciplines.
- Equip students with the necessary preparation for the professional work environments they will encounter after graduation.
- Provide exposure to workplace methods, as well as the operation of equipment and machinery that may not be accessible within their academic institutions.
- Ensure a smooth transition from academic settings to the labor market and enhance students' employability.
- Offer students the opportunity to apply theoretical knowledge in real-world situations, bridging the gap between classroom learning and practical application.
- Foster employer engagement in the educational process and better prepare students for roles within various industries.
- Promote the development of technological expertise essential for national progress and industrial advancement.

1.4 OBJECTIVES OF ESTABLISHMENT

- Deliver optimal and personalized care to patients.
- Acknowledge and respect patients' need for privacy and uphold their dignity.
- Foster positive relationships with patients, their families, and the community through effective health education.
- Perform accurate diagnosis and timely medical interventions.
- Offer training and skill development opportunities for students.
- Ensure adequate hospital supplies, promote efficient use of equipment, and prioritize their maintenance.
- Focus on the prevention, treatment, and control of diseases.

CHAPTER TWO

EXPERIENCE GAINED

2.1. PRECUATION TAKEN IN THE LABORATORY

- Wash hand thoroughly after each test
- Wear hand gloves before carrying out any test in the laboratory and discard after use.
- Do not touch exposed eyes, nose or skin gloved hands.
- Wash hand with water and soap or removal of gloves and after the day's work.
- Always put on laboratory coat.
- Ensure that work surface are kept clean and disinfected before each work
- Do not store food, drink or beverages in the laboratory refrigerator.
- Unnecessary talks are disallowed during work.
- Eating, drinking or application of cosmetics is not allowed in the laboratory.

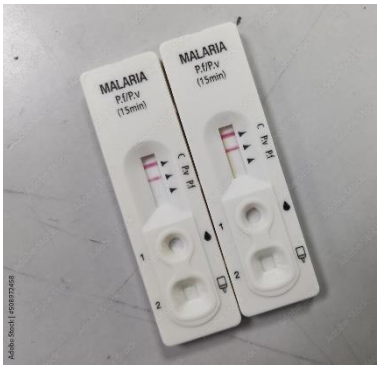
2.2. EQUIPMENT USED IN THE LABORATORY

There are various equipment used in the laboratory to carry out different tests, among which are briefly discussed below:

- Microscope: used for magnifying and focusing image that is not easily seen with the naked eyes.
- Bunsen burner: source of flame (red hot heat)
- Wire loop: used for inoculating
- Test tube: used to heat, centrifuge and hold sample during test.
- Slides: used for routine works such as microscopy and staining purpose in the laboratory.
- Micro capillary reader: used to measure the percentage of PCV
- Capillary tube: Used to spin blood during PCV determination
- Genotype machine: used for genotype determination
- Glucometer machine: used for blood glucose test.
- Laboratory refrigerator: used to keep sample for further use
- Centrifuge machine: used to centrifuge blood or urine.

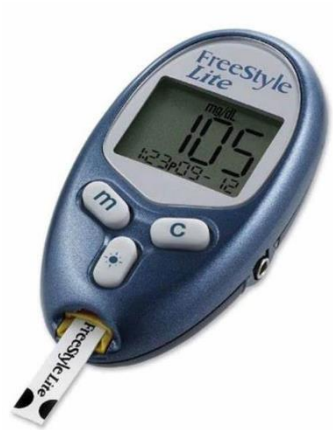
Electron Microscope

Hand gloves



Malaria Parasite (MP) test Kit

EDTA Bottle



Glucometer

Lancet

2.3 SAMPLE COLLECTION

The procedure used to collect blood through the vain

- Collect the necessary material such as syringe, cotton wool, spirit and tourniquet.
- Look for the vein and tie the tourniquet around the patient hand.
- Ask the patient to fold his or her hand in order to show clear appearance of the vein.
- Clean the particular place where you can see the vein clearly with spirit and cotton wool.
- Insert the syringe inside the vein, a little bit deep.
- Draw it little by little, in the case where you did not see blood at that particular place, gently remove the syringe and put it in another place.
- After you have get the blood, ensure that you remove the tourniquet before the syringe, then put the cotton wool on the place that you have remove syringe.

Another method used in the laboratory to collect sample is the use of fingertrip lancet.

- Clean the finger with spirit swap
- Use the lancet to prink the finger
- Collect the sample with EDTA capillary tube

CHAPTER THREE

3.1 MALARIA PARASITE TEST

The malaria parasite test using the MP kit is a simple and effective method for detecting malaria in patients. It involves collecting a blood sample, processing it using the kit, and interpreting the results to determine the presence of malaria parasites. Below is the step-by-step procedure in bullet form:

- **Preparation of Materials**: Gather the MP kit, sample collection tools, buffer solution, gloves, and other necessary items. Ensure a clean workspace.
- **Sample Collection**:
    - Clean the patient's fingertip with an alcohol swab and let it dry.
    - Prick the fingertip with a sterile lancet and collect a small drop of blood.
- **Application of Sample**: Place the blood sample in the designated well on the test strip and add the required drops of buffer solution.
- **Incubation**: Allow the test to process for the specified time, usually 10–15 minutes.
- **Observation of Results**:
    - One line in the control region (C) indicates a negative result.
    - Two lines in the control (C) and test (T) regions indicate a positive result.
    - No line in the control region (C) means the test is invalid.
- **Documentation and Reporting**: Record and report the results appropriately.
- **Disposal of Materials**: Dispose of used materials according to biomedical waste protocols and sanitize the workspace.

3.2 PREGNANCY TEST

A pregnancy test using the PT (Pregnancy Test) strip is a quick and reliable method to detect the presence of the hormone human chorionic gonadotropin (hCG) in urine, which indicates pregnancy. Below is the process described step-by-step:

Procedure

- **Preparation of Materials**:
  - Obtain a PT strip, a clean urine collection container, and a timer.
  - Ensure a clean and dry workspace for the test.
- **Sample Collection**:
  - Collect a fresh urine sample in a clean container. Ideally, use the first morning urine for accurate results due to its higher hCG concentration.
- **Application of Urine to the Test Strip**:
  - Remove the PT strip from its packaging carefully.
  - Dip the absorbent end of the strip into the urine sample up to the marked line for a few seconds (typically 5–10 seconds) or as specified in the instructions.
  - Place the strip on a flat, dry surface with the result window facing up.
- **Incubation**:
  - Allow the test to process for the recommended time, usually 3–5 minutes.
- **Observation of Results**:
  - One line in the control region (C) indicates a negative result (not pregnant).
  - Two lines, one in the control region (C) and one in the test region (T), indicate a positive result (pregnant).
  - No line in the control region (C) means the test is invalid and should be repeated.
- **Disposal of Materials**:
  - Discard the used PT strip and urine sample appropriately.
  - Wash hands thoroughly and clean the workspace.

This simple procedure enables early detection of pregnancy, allowing individuals to seek timely medical advice and care.

3.3 HEPATITIS TEST (HBs Ag)

Hepatitis test strip is a rapid chromatography immuno assay for a qualitative detection of hepatitis, it can be performed using either serum and plasma

PROCEDURE

Remove the test strip from the sealed pouch

For whole blood

Put a drop of blood on the test strips

Add a drop of buffer

Leave for 15 minute

For serum

Put a drop of serum on the test strips

Leave for 15 minutes.

RESULT

If only one colour band appeared at the control line (c), it is negative

If two colour band appeared at the test line (T) it is positive

If none of the colour band should be repeated

CHAPTER FOUR

4.1 EXECUTIVE SUMMARY

This report provides a detailed account of the Students Industrial Work Experience Scheme (SIWES) undertaken at the hospital laboratory. The training was designed to enhance practical skills and bridge the gap between theoretical knowledge and real-world applications in a clinical setting. During the program, I actively participated in various diagnostic and analytical procedures, including malaria parasite tests, pregnancy tests, packed cell volume (PCV) analysis, and urinalysis. These activities provided valuable hands-on experience with laboratory equipment and techniques, fostering a deeper understanding of diagnostic processes and their critical role in patient care.

The SIWES experience not only improved my technical competence but also developed essential professional attributes such as attention to detail, teamwork, and effective communication within a healthcare environment. By working alongside skilled laboratory professionals, I gained insights into quality assurance, safety protocols, and the importance of accuracy in medical diagnostics. This report outlines the procedures conducted, challenges encountered, and the knowledge acquired during the program, highlighting its significance in preparing me for future roles in the healthcare industry.

4.2 CHALLENGES ENCOUNTERED

During the course of the SIWES program at the hospital laboratory, several challenges were encountered that tested my adaptability and problem-solving skills. One major challenge was the occasional lack of sufficient laboratory reagents and consumables, which sometimes hindered the smooth execution of tests. Additionally, equipment malfunctions and delays in repairs disrupted workflow and required reliance on alternative diagnostic methods. Limited access to advanced laboratory equipment also restricted exposure to certain modern diagnostic techniques. Despite these obstacles, the experience provided valuable lessons in resourcefulness, teamwork, and maintaining professionalism under pressure.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

Having passed through the SIWES training, have been able to discover and explore different things about the microbial world; therefore, its usefulness cannot be over – emphasized. The interesting part of this is that the field of microbiology has gotten answer to most of the infection and disease affecting the world. For the few infections that has not been diagnosed, precautionary measures that can be taken against it has been discovered. The only section left is for people should come out of their ignorance and go for medical check – up instead of relying on self – medication and visiting unqualified practitioners, if people could visit hospitals or health – centers frequently and follow the treatments given to them, mortality rate will drastically be reduced and the health status of the nation will be promoted.

More importantly I have been able to see the various prospects available in the field and also the various challenges that call for quick attention. Indeed, the industrial training program has been impactful; it was never a waste of time and energy.

6.1 RECOMMENDATIONS

- Ensure consistent availability of laboratory reagents and consumables to prevent workflow disruptions.

- Regularly maintain and service laboratory equipment to minimize downtime.

- Upgrade laboratory facilities with modern diagnostic tools for improved training and service delivery.

- Employ adequate staff to manage patient workload efficiently and enhance productivity.

- Conduct regular training for interns and staff to build technical skills and maintain high professional standards.