



A TECHNICAL REPORT
STUDENT INDUSTRIAL WORKING EXPERIENCE SCHEME
(SIWES)

Held at
M.C MECHANICAL WORKSHOP OLD JEBBA ROAD ILORIN, KWARA
STATE

Prepared by:
SUNDAY SHEDRACH CHUKWUDI
ND/23/MEC/FT/0026

SUBMITTED TO

DEPARTMENT OF MECHANICAL ENGINEERING TECHNOLOGY
INSTITUTE OF TECHNOLOGY
KWARA STATE POLYTECHNIC, ILORIN

INPARTIAL FULFILLMENT OF THE AWARD OF THE REQUIREMENT OF THE
AWARD OF NATIONAL DIPLOMA IN SCIENCE MECHANICAL ENGINEERING
TECHNOLOGY (MEC)

Sept., – Dec., 2024

DEDICATION

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

ACKNOWLEDGEMENT

I take this opportunity to express my profound gratitude and deep regards to the creator of heaven and earth, the one who knows the beginning and the end, the alpha and the omega, the Almighty Allah and also to my guides (MR & MRS SUNDAY, and to all those who has helped me during my SIWES programme. The blessings, help and guidance given by them, time to time has carry me so this far and shall carry on the journey of life on which I am about to embark. I also take this opportunity to express a deep sense of gratitude to compliment my mentor for his cordial support valuable information and guidance which helped me in completing my SIWES through various stages.

Lastly my deep regard to the best and most inspiring brothers in person of Aduagba and Abubakar

A big thanks goes to my friends DAVID and LKE, May Almighty Allah bless, protect, keep, nourish and guide you through all your life's entire journey. And also my regard to the school board of trustees and the staff a very big thank you to all and sundry.

CHAPTER ONE

ABOUT STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

1.0 INTRODUCTION TO SIWES

The Student Industrial Work Experience Scheme (SIWES) is an acceptance skill program which form part of the approved minimum academic standard in the various programs in Nigeria. The Student Industrial Work Experience Scheme (SIWES), also known as industrial training is a compulsory skill training program designed to expose and prepare student of Nigeria universities, polytechnics, colleges of education, colleges of technology and colleges of agriculture, for the industrial work situation they are likely to meet after graduation.

The scheme also afford students the opportunity of familiarizing and exposing themselves to the needed experience in handling equipment and machinery that are usually not available in their institution. The four month training has to be done in industries, companies, factories, and workshops where value can be added to ones professional carrier and also to acquire knowledge and experience on the course of study.=

Furthermore, it avails the student an opportunity to learn inter and intra-personal relationship, field elevation, cogent mechanized tillage tips, office organization and administration, site management, identification of engineering equipment among other opportunities.

HISTORICAL BACKGROUND OF SIWES

SIWES introduction, initiation and design were done by the Industrial Training Fund (ITF) in 1993 to acquaint students with the skills of handling employers' equipment and machinery. The Industrial Training Fund (ITF) solely funded the scheme during its

formative year. However, due to financial constraint, the fund withdrew from the scheme in 1978.

The federal Government, noting the significance of the skill training handed the management of the scheme to both the National Universities Commission (N. U. C) and the National Board for Technical Education (N.B.T.E) in 1979.

The management and implementation of the scheme was, however, reverted to the I.T.F by the Federal Government in November, 1984 and the administration was effectively taken over by the Industrial Training Fund in July 1985, with the funding solely borne by the Federal Government.

1.1 AIM AND OBJECTIVES OF SIWE

The aims and objectives of student industrial work Experience Scheme (SIWES) are as follows:

- SIWES provide the avenue for Student in institution of higher learning to acquire industrial skills and experience in their course of study.
- It prepares the students for the industrial work situation they are likely to meet after graduation.
- SIWES provides students the opportunity to apply their knowledge in real work situation thereby bridging the gap between theory and practice.
- It makes the transition from school to the world of work easier and enhances student contact for later job placement.
- It exposes students to various method of handling machines.
- It enlists and strengthens employers involvements is the entire educational process and prepare students for employment after graduation.

CHAPTER TWO

DESCRIPTION OF THE ESTABLISHMENT OF ATTACHMENT

2.1. LOCATION AND BRIEF HISTORY OF ESTABLISHMENT

Akoko Benz is located at Tanke junction after Olaleye Event Hall, Off Pipeline Road, Judges Quarter, Ilorin, Kwara State. The company has been in existence since August, 1993 by Alaba Sanni. Akoko Benz has different departments; Department of Lube Shop, Servicing Departments. It also includes inspecting vehicles engine and mechanical component, inspecting vehicle computer and electronic system to repair, maintain and upgrading of the engine.

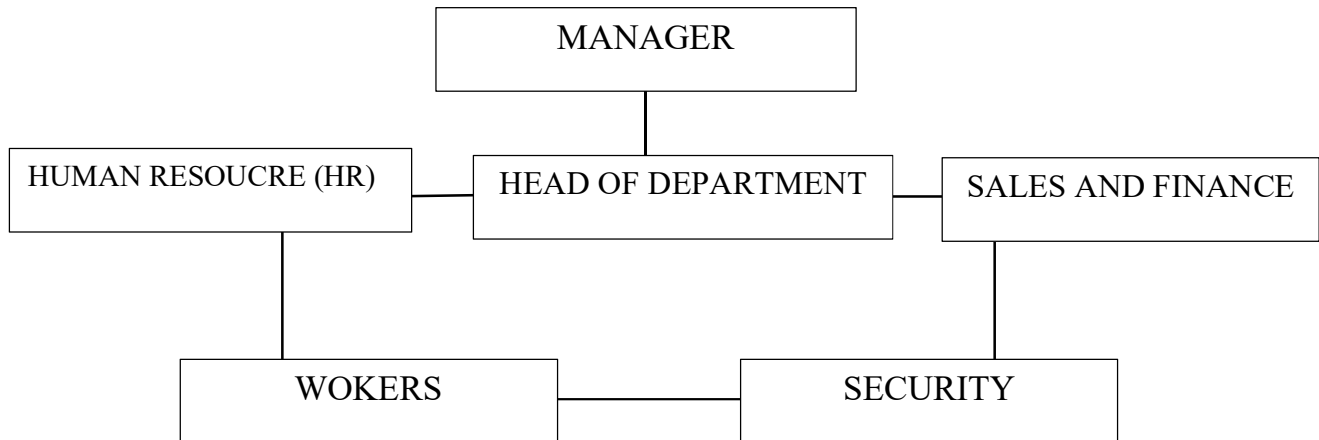
2.2 OBJECTIVE OF ESTABLISHMENT

AKOKO BENZ performs work on diagnosing, troubleshooting and repairing the full range of vehicles, equipment and component. Operate a variety of tool and testing equipment in a safe effective manner. Also diagnose and repair front and rear drive axis, drive train component, belt, gear and chain drives Repair, adjust and replace brake systems including wheel cylinders, disc pads, machine drums and rotor and hydraulic and air breaks.

2.3 ORGANIZATION STRUCTURE

The organization is an Auto mobile workshop that deals with repairing and maintaining of various vehicles and parts. The organization has various departments which are:

ORGANISATION CHART OF AKOKO BENZ AUTOMOBILE ENGINEERING



2.4 VARIOUS DEPARTMENTS IN THE ORGANIZATION AND THEIR FUNCTUIOINS

The organization has the PAINT SHOP, BODY SHOP PART DEPARTMENT, SERVICING OF ENGINE DEPAERTMENT, and REWIRING DEPARTMENTS. The rewiring department are involve in the repair of front light, radios, most of the wiring part in a car. The servicing department is involve in checking of every oils in the car engine and replacing them, checking of every other part of the car if it needs new once. I was place in automobile maintenance workshop. Cleaning and maintaining of vehicle part.

CHAPTER THREE

3.1 DESCRIPTIONS OF WORK DONE

Descriptions of work done during my stay in AKOKO BENZ. I was assigned to the service and maintenance department as diagnostic and mechanical technician. The job duties in the department includes: keeping equipment available for use inspecting and testing vehicles, completing preventive maintenance such as engine tune ups, changing of oil, replacing of filter, wheel balancing. Maintaining vehicle functional condition by listening to operator complaints: replacing parts and components. Verify vehicles serviceability by conducting, test drives, adjusting controls and system.

3.2 SAFETY

Accident in the workshop Claim far too many victims and approximately 70% of these accidents are caused by neglect and carelessness on the part of the workmen hence, the need for the safety cannot be overemphasized.

My first day at the workshop on the 15th of AUGUST 2022. I was made to understand all safety rules that govern the proper and safe operation of a standard automobile workshop included in my letter of acceptance for industrial base training is a list of safety material I should resume with, the material were examined and I was given an orientation by my college on general automobile workshop safety and practice with emphasis on hazard.

**DURING MY CAUSE OF TRAINING I WAS OPPORTUNE TO USE THE
FOLLOWING TOOLS:**

- Wheel spanner
- Screw drivers (different types and sizes)
- Flat and rings spanner
- Pliers
- Extension bar
- Air ratchet
- Wrenches
- Ratchets
- Dead Blow Mallet
- Funnels
- Car jacks
- Ramps
- Ait Cord
- Jump starter
- Flashlight
- Mechanical gloves
- Safety glasses
- Tire gauge

3.3 SAFETY RULES IN THE WORKSHOP

- During my cause of training I was enlighten about the following safety rules and they were emphasized:
- Always use the right tools for the right job and damaged tool should be repaired or do away with.
- All workers movement within the workshop should be normal and not hurriedly with the proper watch out for projected materials so always move gently in the workshop.
- Appropriate workshop clothing should be worn with all loose, use of safety boot to prevent on stepping on sharp object
- Never smoke in or near repair bays or workshop. Vehicles contain flammable and combustibile fluids which easily be set on fire if a hot ash from cigarette where to come in contact with it
- Keep work areas clean and organized to keep walkways clear and free from slippery.
- Always remove keys to prevent ignition switch.
- Never work under a vehicle not only it has been supported under to keep it firm
- Never place hands, tools, or other objects near the engine while it running

3.4 AUTOMATIVE MECHANICAL SYSTEMS AND SERVICESPARK PLUG:

The spark plug supplies the spark that ignites the air/fuel mixtures so that combustion can occur. The spark must happen at just the right moment for things to work properly



VALVE: This consists of both the inlet and exhaust valves which open at their proper time to let in air and fuel and to let out exhaust. Both valves are closed during compression and combustion so that the combustion chamber is sealed.



Learnt the functions of valves which are:

- Start and stop flow
- Control flow rate
- Control pressure
- Direct flow
- Prevent backflow
- Regulates fluid level
- Protect equipment

PISTON: Piston is a cylinder piece of metal that reciprocates up and down inside the cylinder it converts the energy released during combustion into a mechanical.



During my cause of training I learnt the functions of piston which are:

- Sealing the combustion chamber
- Transferring heat
- Reduce vibration
- Controlling fuel consumption

CONNECTING ROD: The connecting rod connects the piston to the crankshaft it can rotate at both ends so that its angles can change as the piston moves and the crankshaft rotates.



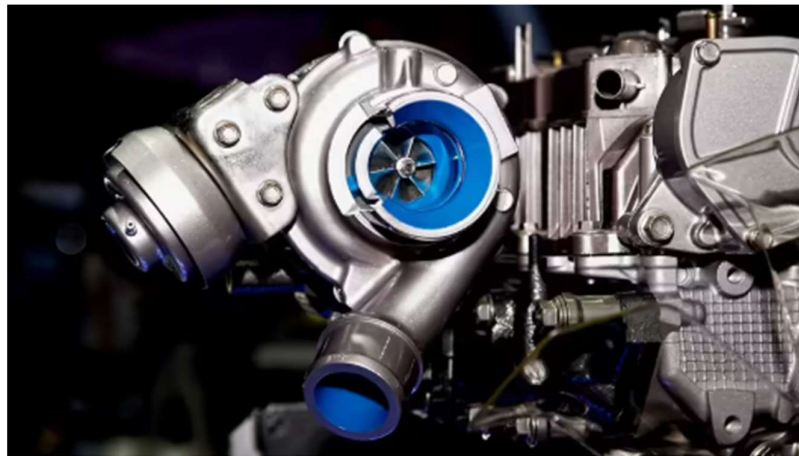
BRAKE PADS: Changing of brake pad after it has gone flat and not able to stop the motion of the car anymore, so the old brake pad must be replaced with new ones. The wheels are connected to a brake rotor that turns with the wheel. The brake calipers apply pressure to the rotors when the brakes are applied. A brake pad lies between the rotor and the caliper to reduce the level of friction from metal on metal. Over time, the pads need to be replaced.



During my cause of training I learnt the functions of Brake pads:

- Reduce friction
- Heat dissipation
- Wear resistance
- Noise reduction
- Safety during driving

TURBO AIR CHARGER: Changing of turbo air charger in BENZ 2003, replacing it after it got spoilt and the function is to force more air into the engines and increase the horsepower produced and it connected to give it more power and extreme exhaust heat kills turbo charger in a car.



During my cause of study I learnt about the key functions of a turbo charger:

- Boost engine power
- Improve engine efficiency
- Increase torque
- Enhance altitude performance
- Reduce emissions

CHAPTER FOUR

4.0 CHANGING OF ENGINE OIL IN VEHICLES

During the course of my training a number of vehicles engine oil was changed and the steps were:

1. The vehicle was lifted in order to have access to the sump
2. Use a socket wrench to loosen the drain plug first that holds the sump.
3. Always inspect to avoid oil drips. It will take several minutes for oil to drain completely. This is a good time to inspect other areas of the vehicles.
4. Reinstall drain plug and torque wipe down the drain plug and oil thread, inspect condition plug to see if there is any need to replace it when the oil is finish draining, replace the drain plug and use socket wrench to tighten it up.
5. Remove the old oil filter; locate the oil filter in the vehicle the old oil filter will retain some oil inside.
6. Replace the old filter with the new filter.
7. Add new engine oil into the vehicle to the exact volume of the oil required.
8. Replace the oil fill cap and start the engine let engine work at least 30 seconds while checking if there are any leaks to get them repaired.
9. Stop the engine, lower vehicle and check dipstick level.
10. Document the oil change to know the exact time for another change

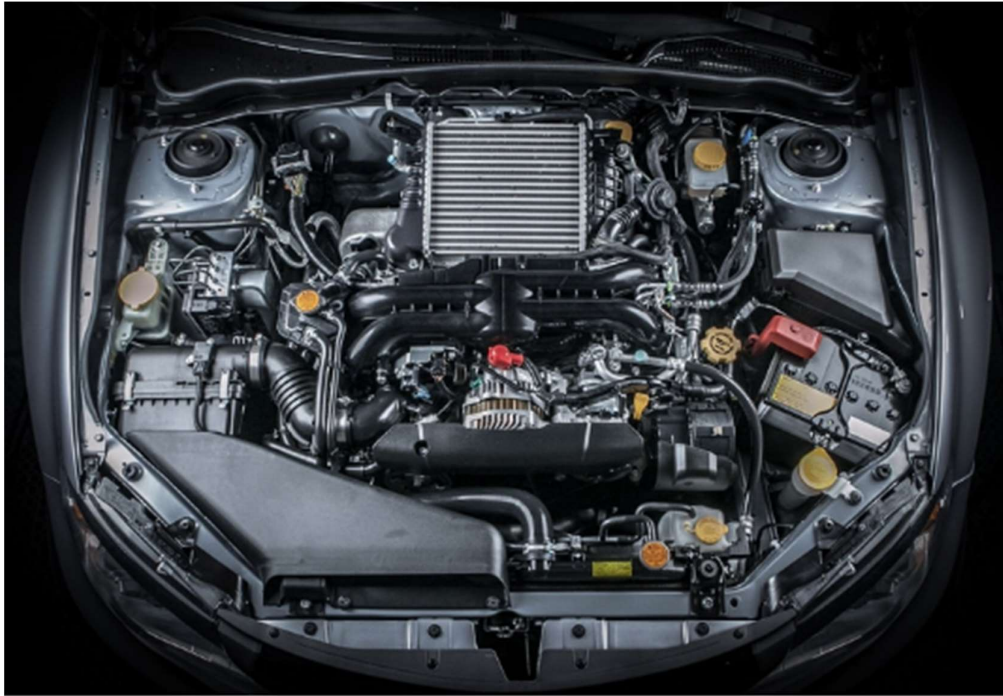
4.1 THE POWER STEERING PUMP OF A VEHICLE

The power steering pumps helps reduce the effort needed to steer a car by exerting a hydraulic pressure which in turn help turn the car wheels. And also note that if the pump has developed a leak and is losing fluid or isn't working properly for any reason, the safety

of the occupants is in danger. To ensure the car is safe you must have the power steering pump to be replaced or changed.

REPLACEMENT OF A POWER STEERING PUMP

- During my cause of training a number of vehicles power steering pumps were replaced the steps were:
- At first the engine is shut off allowing it to cool.
- Identify the location of the steering pump.
- Remove the power steering belt from the pump.
- Ensure a pan is placed under the pump and drain the power steering pump steering fluid from the pump by disconnecting the feed and returns lines.
- Then removing the mounting bolts from the mounting bracket.
- Now remove the power steering pump.
- Get the new power steering pump and bolt it down to the mounting bracket.
- And reconnect the feed and return lines to the pump.
- The power steering belt reconnected back must be tight and firm.
- Filling the new pump with power steering fluid.
- Turn on the engine and let it run for a few minutes before driving to make sure the oil is circulated.
- Check the fluid level making use of dipstick.
- Turn the steering wheel to the left and right and see if it moves easily



All this steps were done on how to replace a power steering pump

4.2. THE GASKET OF A CAR

The gasket is a piece of rubber that you might not give much thought to. Automotive gasket are sealing and cushioning materials frequently placed between two surfaces joined by bolts. When the engine is running, oil flows through by way of oil port; the oil lubricates all the moving part inside the engine, the gasket is made from durable materials such as aluminized steel coated in rubber or a rubber compound, the seal compensates for expansion and contraction caused by change of heat, the cushion prevent wear and tear during vibration the main purpose of the gasket is to seal the combustion gases within the cylinder and to avoid coolant or engine oil leaking into the cylinder.



FUNCTION OF THE GASKET

its purpose is to seal combustion gases within the cylinders and to avoid coolant or engine oil leaking into the cylinder. Leaks in the head gasket can cause poor engine running or overheating



Shock Absorber



Break Caliper



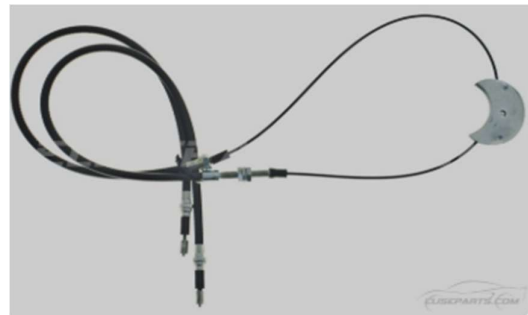
Steering Pump



Air Filter Function



Steering Rack



Hand Break Cable

CHAPTER FIVE

5.0 CONCLUSION

My four months SIWES training attachment as a student engineer at AKOKO BENZ was a success and a great time of acquisition of knowledge and skills. Through my training, I was able to appreciate my chosen course of study even more, because I had to blend the theoretical knowledge acquired from school with practical hands-on application of knowledge gained to perform very important task that contributed to the productivity of the workshop.

The SIWES training has given me a broader view to the importance and relevance of mechanical engineering in the immediate society and the world as a whole, as now I look forward to impacting it positively. I have also been able to appreciate the connection between my course of study and other disciplines that I am producing a successful result.

5.1 RECOMMENDATION

I use this means to provide the following recommendations concerning training of students in SIWES training attachment:

1. I would like to suggest that a fund should be set with charitable aim of providing trainings to individuals about construction labors in other to generate a pool of unskilled labors with basic knowledge and communication skills.
2. I would recommend that the polytechnic should try to get placement for the student by containing all engineering organization to admit any student for their SIWES program.
3. I recommend that the industrial training fund [ITF] should provide stipends to SIWES students during their program rather than after. This will help student to

counter some financial issues that might arise during the program e.g. transportation, feeding.

4. The area of supervision should be taken care of any errors.
5. Choose a relevant organization: Try to choose an organization that is relevant to your field of study, as this will give you the opportunity to gain practical experience in your chosen career path
6. Network: Take advantage of the opportunity to meet professionals in your field and network with them. This can lead to potential job opportunities after graduation.

5.2 SUMMARY OF ATTACHMENT ACTIVITIES

During the SIWES period, students may be exposed to various aspects of mechanical engineering, including design, manufacturing, testing, maintenance, and repair of mechanical systems and equipments. The attachment may involve working with machines, tools, and equipment used in the industry, as well as working closely with experienced engineers.

5.3 PROBLEM ENCOUNTERED DURING THE PROGRAM

1. Lack of accommodation for trainees: The first things that comes, across the mind of every perspectives trainee is that of accommodation. This is because the training is not done within the school environment. Hence the trainee will require getting an accommodation close to the place of attachment.
2. Lack of practical skills: Some students may struggle to apply the theoretical knowledge learned in school to real world situations. This can make it difficult to perform well during the SIWES program.

3. Poor supervision: In some cases, students may not receive adequate guidance or supervision from their supervisors. This can lead to confusion and frustration, and may affect the quality of the student's work.
4. Transportation: Some students may face challenges with transportation to and from their SIWES placement, which can make it difficult to attend to work regularly and on time.

5.4 SUGGESTIONS FOR THE IMPROVEMENT OF THE SCHEME

Increasing the number of participating organization: The SIWES program can be expanded by increasing the number of organization that participated in the program. This will provide more opportunities for the student to gain work experience and also help to reduce the competition for limited spaces.

Improve the quality and the relevance of training: There should be focus on ensuring that the training provided during the SIWES program is of high quality and relevant to students' area of study.

Strengthen the monitoring and evaluation mechanism: There should be an effective monitoring and evaluation mechanism in place to ensure that the program is achieving its objectives. This can be done by conducting regular reviews of the program and collecting feedbacks from students, organizations, and trainers.