A TECHNICAL REPORT

ON STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES)

UNDERTAKEN AT

EASY PLANNING AND CONSTRUCTION WORK

BY

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DECEMBER 2024

DEDICATION

I dedicate this industrial attachment work to God Almighty who begin this programme with me and made the success of it to an end.

I dedicate this programme to my beloved parents May you live to eat the fruit of your labour. (Amen).

ACKNOWLEDGEMENTS

I wish to acknowledge the management **EASY PLANNING AND CONSTRUCTION WORK** for giving me the privilege to serve in their firm during the period of my industrial attachment

I thank my sisters and brothers) and all my friends and family for their moral and financial supports. I pray God will spare your life so that you can eat the fruit of your labour (Amen).

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CHAPTER ONE

INTRODUCTION

1.1 STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME (SIWES) BACKGROUND

In the earlier stage of science and technology education in Nigeria, students were graduating from their respective institutions without any technical knowledge or working experience. It was in this view that students undergoing science and technology related courses were mandated for students in different institution in view of widening their horizons so as to enable them have technical knowledge or working experience before graduating from their various institutions.

The Student Industrial Work Experience Scheme (SIWES) was established by the Industrial Training Fund (ITF) in 1973 to enable students of tertiary institution have technical knowledge of industrial work base on their course of study before the completion of their program in their respective institutions. The scheme was designed to expose students to industrial environment and enable them develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. The major background behind the embankment of students in SIWES was to expose them to the industrial environment and enable them develop occupational competencies so that they can readily contribute their quota to national economic and technological development after graduation. The major benefit accruing to students who participate conscientiously in Students Industrial Work Experience Scheme (SIWES) are the skills and competencies they acquire. The relevant production skills remain a part of the recipients of industrial training as life-long assets which cannot be taken away from them. This is because the knowledge and skills acquired through training are internalized and become relevant when required to perform jobs or functions.

1.2 OBJECTIVES

The Industrial Training Funds policy Document No. 1 of 1973 which established SIWES outlined the objectives of the scheme. The objectives are to:

1. Provide an avenue for students in higher institutions of learning to acquire industrial skills and experiences during their course of study.
2. Prepare students for industrial work situations that they are likely to meet after graduation.

3. Expose students to work methods and techniques in handling equipment and machinery hat may not be available in their institutions.
4. Make the transition from school to the world of work easier and enhance students' contacts for later job placements.
5. Provide students with the opportunities to apply their educational knowledge in real work situations, thereby bridging the gap between theory and practice.
6. Enlist and strengthen employers' involvement in the entire educational process and prepare students for employment in Industry and Commerce (Information and Guideline for SIWES, 2002).

1.3 BODIES INVOLVED IN THE MANAGEMENT OF SIWES

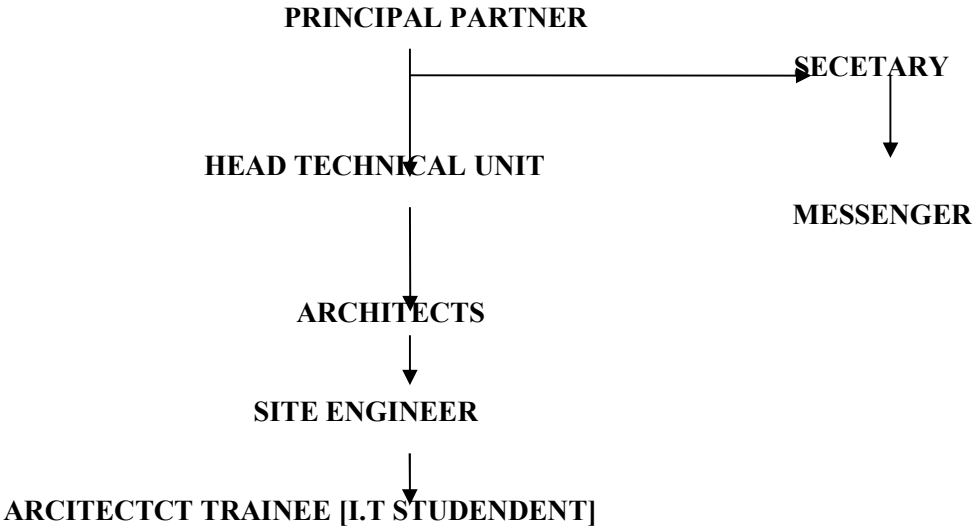
The bodies involved are: The Federal Government, Industrial Training Fund (ITF). Other supervising agents are: National University Commission (NUC), National Board for Technical Education (NBTE) and National Council for Colleges of Education (NCE) the functions of these agencies above include among others to:

- Ensure adequate funding of the scheme;
- Establish SIWES and accredit SIWWES unit in the approved institutions;
- Formulate policies and guideline for participating bodies and institutions as well as appointing SIWES coordinators and supporting staff;
- Supervise students at their places of attachment and sign their lob-book and IT forms;
- Vet and process student's log-book and forward same to ITF Area office;
- Ensure payment of allowances for the students and supervisors.

Therefore the success or otherwise of the SIWES depends on the efficiency of the Ministries, ITF, Institutions, Employers of labour and the general public involved in articulation and management of the program. Thus the evaluation of SIWES in tertiary institutions in meeting up with the needs for the establishment of the program is necessary.

CHAPTERTWO

ORGANIZATION CHART



Name and Address of the Company: EASY PLANNING AND CONSTRUCTION LIMITED, No2, Court of Appeal Gerri Alimi, Ilorin, Kwara State

1.4 Major Activities

Production of Architectural design

Supervision of construction

1.5 Unit function

1.5.1 Architectural Unit

1. This is the main unit if an architectural firm, which are in charge of collecting information and getting data from client and carry out site investigation to produce architectural working drawing.
2. The unit carry out proper supervision and monitoring of construction of building.
3. The unit serve as client's representative to planning authority, on client demand.

CHAPTER THREE

THE KNOWLEDGE AND EXPERIENCE EASY PLANNING AND CONSTRUCTION LIMITED

INTRODUCTION

Brief introduction on the course Architecture, what it entails, and its relationship to others field that works hand to hand for the complete construction of a project also the commitment to put to become a great and successful architect.

ARCHITECTURAL INSTRUMENT AND THEIR FUCTION

Explaining the various architectural instruments to my colleagues and me and their various functions. E.g. Tee-square for horizontal line.

Adjustable set square for vertical lines and for angles, circles template for

Arch and circle, furniture arrangement, stencil for writing Alphabets and numbers and scale rule for measuring etc.

LETTERING, CONVERSION AND ACCURACY

This is the act of written an alphabet and number in architecture.

Letterings is important in architecture because is the act that will teach how to write in an architecture.

CONVERSION

This is the process of changing measurement from one unit to another e.g. changing of feet to meter, minimize to feet etc.

Table 2.0

Minimize for (mm)	Meter m	Inches (“)	Feet (‘)
25	0.025	1.	0
50	0.050	2	0
300	0.300	12	1

Example 1. 350mm = 0.35m = 1!2”

2. 11.750mm = 11.75m = 39!2”

3. 525mm = 0.525 = 1!9” etc.

ACCURACY

This is an attempt to establish the difference between the measured value and the true value. Although absolute accuracy is not possible.

DIMESSION: This is the ac of measuring the drawing so as to known the size of the drawing i.e. to know the length and breadth of a project.

DRAWING

Various types of drawing involved to make up is plan of a building are:

1. Architecture drawing
2. Structural drawing
3. Service drawing/electrical and mechanical drawing

ARCHITECTURE DRAWING

There are two classes of drawing in Architecture namely working drawing and Presentation drawing

WORKING DRAWING

This is the type of drawing that is used for the construction of a project and is also the drawing that others draw i.e. Structural, Electrical and Mechanical drawing will follow for the production of their own drawing. An Architect must sure that the drawing is well discussed.

PRESENTATION DRAWING

This is the type that is presented to the client so as to know the his/her project project will look like and is also a drawing that is submitted to the authority for approval of project.

FLOOR PLAN

This is plan that shows the arrangement of different rooms (spaces) and passage. Each floor must be provided with a floor plan, unless each floor is identified.

A floor plan is usually a sectional plan at about the edge level of the observer and must give the details of the following.

- The direction of north
- The size and spacing of all supporting members and the thickness of all walls.
- The exact location of doors, windows, cupboards, water closets, sinks, baths or any other features that can be seen. (These objects must be indicated by the appropriate standard symbols.)
- The overall dimensions and sizes of individual's parts.

ROOF PLAN

This is the plan that shows the roof of a building when its viewer above i.e. the view is above the plan. Roof plan must at least be 600mm projected away from the normal building this is because it will prevent the building from direct rays, do sun and rain. The projection is called roof overhead is not projected. This is because gutter has run along the building.

SECTION

This is the plan that shows the skeletons of a building so as to detail some feature that can be seen in the elevations.

We have two types of section namely:

1. Cross section
2. Longitudinal section

CROSS SECTION

These are vertical section elevation through the building.

LONGITUDINAL SECTION

These are horizontal or long sectional elevation through the building section must be chosen so that they cut (and show) as many detail as possible. The following details must be given.

- Detail of construction materials (which may be shown symbolically), together with the thickness of each.
- The height of doors, windows, cupboards and ceilings.

- The depth and width of foundations, beams, walls and floors.
- The arrangement for and the slope of the roofs.
- The street and ground elevation
- Details of stair cases

ELEVATION

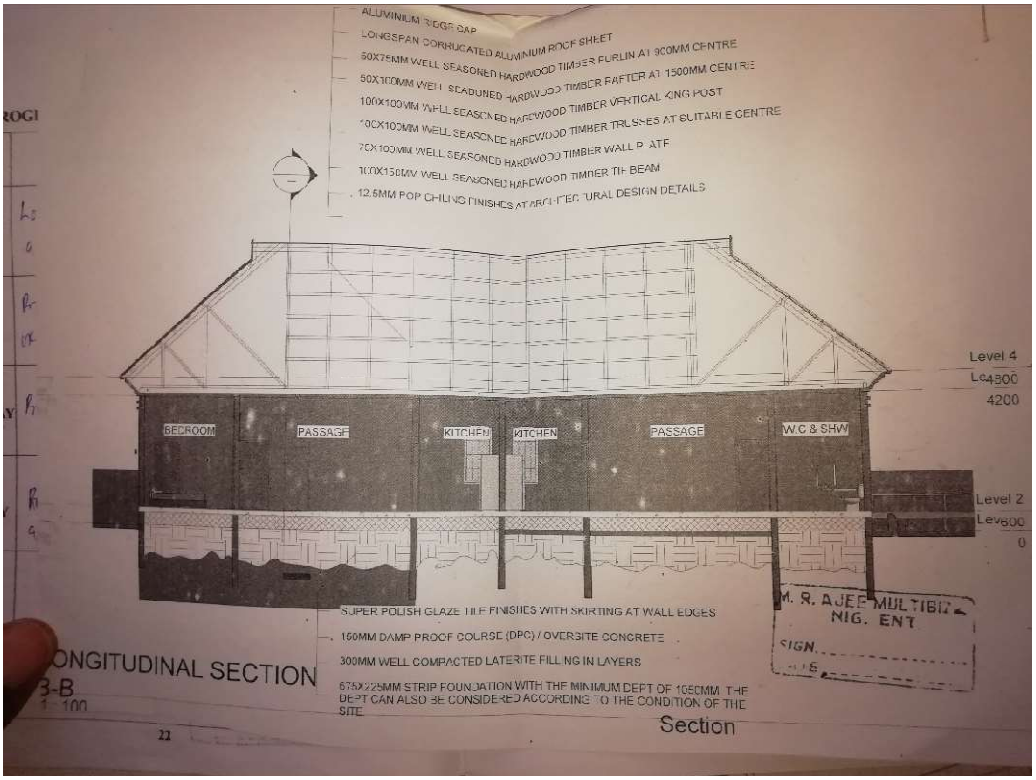
This is the plan that shows the external faces of a building which will have four types of elevation.

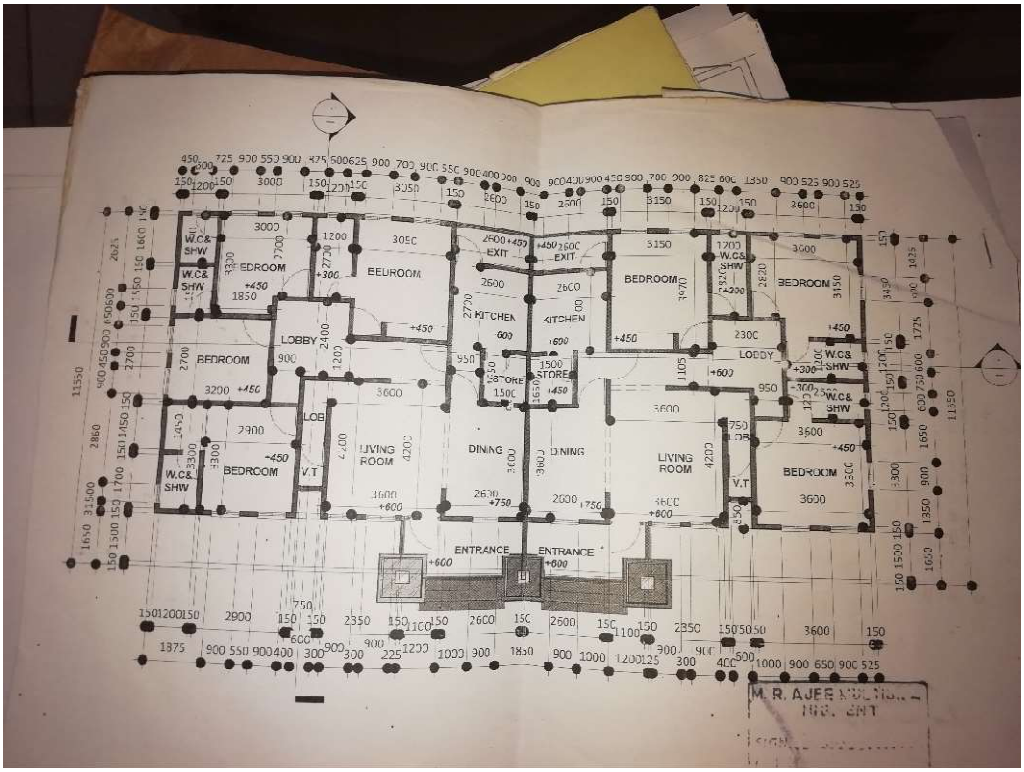
1. Front elevation
2. Right elevation
3. Left elevation
4. Back elevation

TYPES OF BUILDING

A building is a structural enclosing space parts of a building (such as walls, columns, roofs, balconies or staircases) may also be referred to as building we have four (4) types of buildings.

a. Residential building e.g. house
b. Commercial building e.g. Shops and commercial offices
c. Industrial building e.g. Factories, Ware House, Laundries.
d. Public building e.g. place of Worship, School, Hotel etc.





Architectural Design

CHAPTER FOUR

CONSTRUCTION TERMS AND TECHNIQUES

The Construction techniques and terms described in this report involves the various methods of construction carried out in the course of building construction for both structural and non-structural elements of the building. While on site, certain terms were used during the construction. These terms could be referred to as technical terms or site terms or language being used by the site workers. As an architect, adequate knowledge of these terms must be paid attention to in order communicate effectively with the workers. Below are some site terms and definitions.

BLOCKWORK

This is the process of laying concrete masonry units to form either external walls as in-fills or lock wall which are load-bearing or non- load bearing or internal walls as partitions. These masonry units are commonly hollow sand-crete blocks which are much economical per unit of wall area. The standard sand-crete block wall is explained below;

Sequence of laying of sand-crete block wall:

•A bed of mortar is spread on the footing/floor.

•The first course of blocks for a lead is laid on the mortar. The mortar for the head joint is applied to the end of each block with the trowel before the block is laid.

•The lead is built higher. Mortar is normally applied only to the face shells of the block and not to the webs.

•As each new course is started on the lead, its height is checked with either a folding rule or a story pole marked with the height of each course.

•A line is stretched between the leads on line blocks.

•The course between the leads are laid rapidly by aligning each block with the stretched line.

•The last block to be installed in each course of infill blocks, the closer must be inserted between blocks that have already been laid then the block is lowered carefully into position.

PLASTERING

Plastering is the most common treatment for external and internal walls to help withstand weather conditions. Plasters are used to render, run an uneven surface into a smooth level

surface. Plaster is a mixture of sand and cement at a ratio of 4:1 or 3:1(i.e. 8/6 head pans to1 bag of cement). Plastering is also used to correct mistakes and to provide a smooth surface area for other finishing types like painting.

FLOATING

Floating is the backing coat that is usually made of plaster such as **Plaster of Paris (P.O.P)** that provides a true or smooth surface for the final finishing coat on a wall after plastering has been carried out on a wall surface. Most importantly, floating is carried out on wall surfaces to fill up all uneven areas on a wall surface and may be applied on the internal or external surface of walls, and also on ceilings. On majority of the sites I went to, all the internal walls were floated with P.O.P after cement plastering was done.

TILING

Tiling in general terms can be defined as the cladding of a surface. We have floor tiling and wall tilling (both external and internal walls).

Tiles come in two forms namely:

•**Vitrified tiles**: these are tiles with the same properties all through, i.e. when wearing occurs, the subsequent layers have the same texture, density and material. They are mainly used for external walls and floors.

•**Ceramic tiles**: these tiles are made with clay and laminated surfaces; they are usually used for toilets and kitchen tilling. Surface finish for tiles is either glazed or unglazed and the material used for making the tiles include stones, clay, and plastics, etc.

PARAPET WALL

A parapet wall is a protective wall constructed on the perimeter edge/area of a roof slab to protect rain water accumulation on the gutter /drainage of the roof slab from draining down the sides of a building. It is usually of reinforced concrete and cast-in-situ. On site, a parapet wall was constructed to a height of 1.0m.

2.8 ROOF GUTTER

Roof gutter is the drainage path created on a flat roof slab to channel accumulated rain water for the roofing sheet into the drainage pipes on the roof slab.

DRAINAGE PIPES

Drainage pipes are pipes installed on the roof slab to drain rain/storm water on roof slab. They are channeled through the roof beams and connected to the exterior columns which are then sent down to the inspection chamber. They are made of PVC plastic pipes and are100mm in diameter width.

FELTING

Felting of a roof slab involves the protection of the exposed concrete surface of the roof from water penetration and infiltration, and all forms of damp and moist actions by laying a thick damp proof membrane on the roof slab. One of the most common felts applied on roof slab sis the bituminous felt. It is hot –mopped with asphalt to create a strong damp proof membrane.

BUILDING SERVICES

In the construction of any building, there are two main services that must be provided in the building in order to create a comfortable and habitable internal building environment for the building occupants. These services are divided into two main branches namely:

- **Electrical engineering services**
- **Mechanical engineering services**

CONCRETE

Concrete is a mixture of coarse and fine aggregates, cement and water which is allowed to harden. Coarse aggregate used on site is normally gravel and Fine aggregate is sand

Concrete mixes/ratio:

Concrete "slump test":

On site, before any concrete is cast into the formwork or mold, a slump test is always carried out on it to test for its consistency and quality check to determine the desired degree of workability. Freshly mixed concrete is an unstable mixture of solids and liquids. If it is vibrated excessively, and dropped from a height, it is likely to segregate, which means that the coarse aggregate work sits way to the bottom of the form and the water and cement paste rise to the top. The result is concrete of non-uniform and with unsatisfactory properties.

"Curing of concrete"

Concrete cures by hydration and not by drying. Thus, it is essential that the concrete must be moist until its required strength is achieved. Maximum strength for concrete is attained after 28days (4 weeks) of curing. If it is allowed to dry at any point during this timeframe, the strength

of the cured concrete will be reduced and its surface hardness and durability are likely to be adversely affected.

REINFORCEMENT BARS

Concrete has no useful tensile strength and is limited in its structural uses. Steel reinforcement bars are used in concrete columns beams, and slabs. Reinforcement bars have various diameter sizes. They come in 12mm,16mm 18mm, 20mm 24mm 30mm and 32mmdiameter sizes.

CASTING

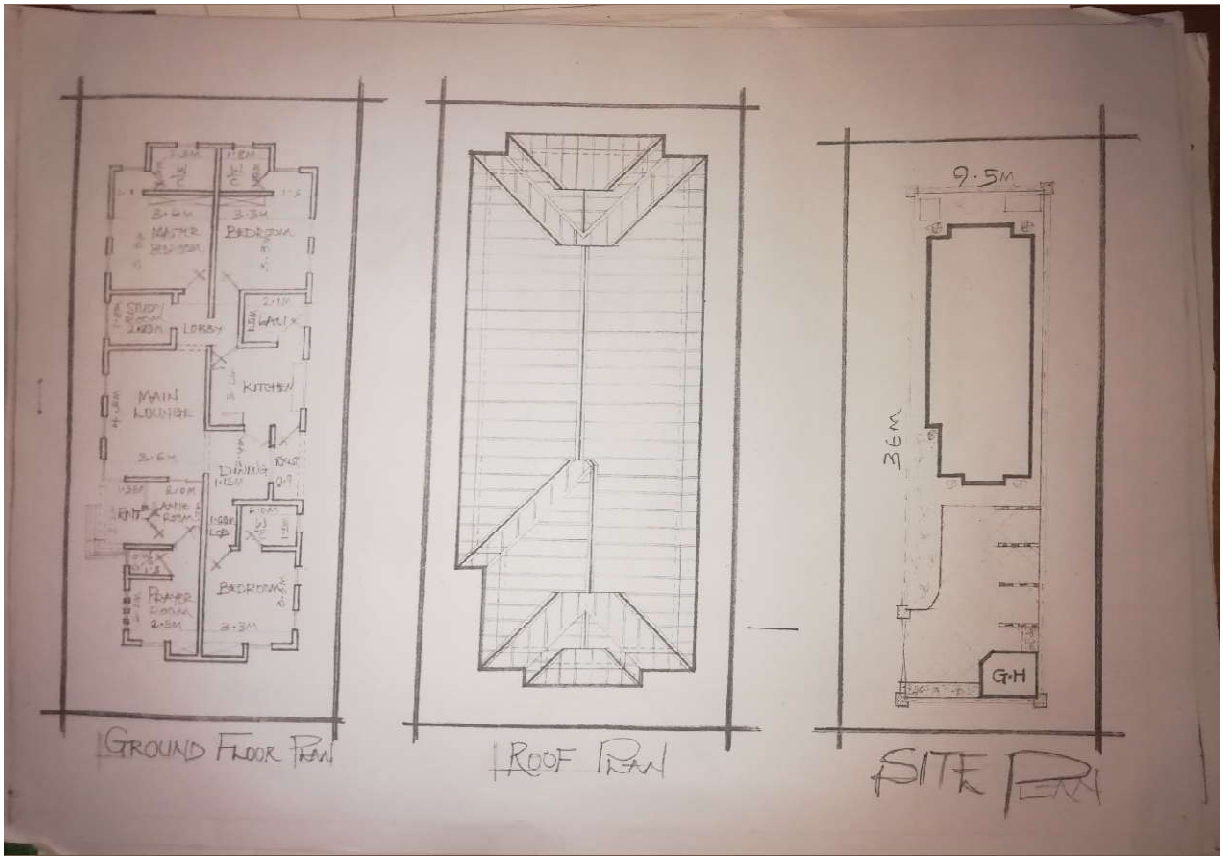
Casting is the process of pouring concrete mix into a mold or form laid with reinforcement bars to form a solid mass structure.

Casting a concrete wall

•Vertical reinforcing bars are first wired to the dowels that project from the foundation footing and horizontal bars are wired to the vertical bars as seen in the illustration below.

•The formwork is erected. Sheets of plywood form the face of the concrete and are supported by wooden studs. The studs are supported against the pressure of the wet concrete by horizontal supports.

•The concrete is then poured, compacted and cured.


MASTER BEDROOM
STUDY
LOBBY
MAIN LOUNGE
KITCHEN
DINING
FAMILY ROOM
BEDROOM
PRAYER ROOM
GROUND FLOOR PLAN
ROOF PLAN
9.5M
36M
G.H
SITE PLAN

CHAPTER FOUR

SUMMARY, CONCLUSION AND RECOMMENDATION

CONCLUSION

The programme gave me an opportunity to work as an architect and proper orientation of transforming theoretical knowledge in class to practical application. It was also an opportunity to handle and operate ultra-modern equipment and it has also helped us to expand our knowledge and experience.

RECOMMENDATION

The Federal Ministry of Education in cooperation with universities should make architectural studio related establishments to impress it on their staff to really train students and give them free and to practice. The government should also try to pay the students allowance so as to serve as help for the students in one way or the others and also to mobilize those who did not want to do SIWES programme.

Education materials about the practices of a particular establishment should be made readily available to students and also the supervisor should try and visit the attachment places of the students for proper monitoring, improvement and progress for the benefit of the societies as a whole.