A TECHNICAL REPORT
STUDENT INDUSTRIAL WORKING EXPERIENCE SCHEME
(SIWES)

Held at

MR. AJEE PLANNING TEAM

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DEDICATION

This Siwes work is purely dedicated to Almighty Allah and my beloved parents, Mr. and Mrs. Adelodun.

ACKNOWLEDGEMENTS

I am most grateful to Almighty Allah for giving me this opportunity and strength to complete this Siwes programme at this stage of my education career. I am greatly indebted to my family, and friends for their contribution towards my programme.

Lastly, my gratitude also goes to myself for not letting all my efforts go unsuccessfully.

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CHAPTER ONE

1.1 Introduction to SIWES

Students' Industrial Work Experience Scheme (SIWES) was designed with the responsibility of promoting and encouraging the acquisition of skills in industry and commerce with the view of generating a pool of trained indigenous man power sufficient to meet the needs of the economy. The most important asset of any industrial organization depends on the technical competence of its manpower for the operation and maintenance of its non-human assets and resources, hence, the need for SIWES.

SIWES was established by ITF in 1973 to solve the problem of lack of adequate practical skills preparatory for employment in industries by Nigerian graduates of tertiary institutions. The Scheme exposes students to industry based skills necessary for a smooth transition from the classroom to the world of work. It affords students of tertiary institutions the opportunity of being familiarized and exposed to the needed experience in handling machinery and equipment which are usually not available in the educational institutions.

Participation in SIWES has become a necessary pre- condition for the award of Diploma and Degree certificates in specific disciplines in most institutions of higher learning in the country, in accordance with the education policy of government. Operators – The ITF, the coordinating agencies (NUC, NCCE, NBTE), employers of labour and the institutions. Funding – The Federal Government of Nigeria.

Beneficiaries – Undergraduate students of the following: Agriculture, Engineering, Technology, Environmental, Science, Education, Medical Science and Pure and Applied Sciences.

1.2 Aim and Objectives of SIWES

The operational standards and guides for the program is such that students are posted to an organized establishment, either private or public, where activities of such organization are relevant to the student's course of study. At various levels, the students are meant to undergo this period of training to enable them relate the theoretical knowledge taught in school to the practicality outside there.

This report is aimed at providing detailed records of activities carried out during the industrial training with a view to assessing the relevance of SIWES to field. The aim of SIWES is to expose student to the working environment that are peculiar to each of their different professions outside the lecture rooms in order that they may acquire practical experience that would be of immense benefit to them in the nearest future when they begin to practice these professions.

Objectives

i. To examine the correlation between the theoretical and practical aspects of the profession.
ii. To provide the opportunities for students to apply their theoretical knowledge in real work practice
iii. To prepare students for industrial work situations after graduation.
iv. To expose students to work methods and techniques in handling equipment.
v. To bridge the gap between the classroom work and the real world.
vi. To examine the contributions of the student to the development of the unit and the organization as a whole.

CHAPTER TWO

ROLES OF ARCHITECTURE, ARCHITECTURAL DRAWING INSTRUMENT, ORGANIZATION STRUCTURE AND FUNCTIONS

2.1 The Roles of Architecture

Architects are licensed professionals trained in the art and science of building design, develop the concepts for structures and turn those concepts into images and plans. Before constructing a building, an architect needs to draw a plan of the building. It is very wrong to commence construction without a standard building plan, as the project would lack focus and direction.

Architects create the overall aesthetic and look of buildings and other structures, but the design of a building involves far more than its appearance. Buildings also must be functional, safe, and economical and must suit the needs of the people who use them. How many people are going to use the building at the same time? What types of activities will these people do in the building? Architects have to design building so that people can escape from the building in an emergency. The plans also specify the building materials and the interior furnishings. Architects consider all these factors when they design buildings and other structures.

The architect provides various designs, and then prepares drawings and a report presenting ideas to the client based on his needs. Computer-aided design and drafting (CADD) and Building Information Modeling (BIM) technology has replaced traditional paper and pencil as the most common method for creating design and construction drawings.

After discussing and agreeing on the initial proposal, architects develop final construction plans that show the building's appearance and details for its construction. The plan is then passed to the Structural Engineer for his own design.

The role of an architect does not end in the design stage during construction (it's not the responsibility of an architect to undertake the actual construction activities) continual revision of plans on the basis of client needs, budget and other constraints not envisaged during design stage is often necessary. As construction proceeds, he visit building sites to make sure that contractors follow the design, adhere to the schedule, use the specified materials, and meet work quality standards. The job is not complete until all construction is finished.

2.2 Some Architectural Drawing Instrument

Drawing Instruments are used to prepare neat and accurate Drawings. To a greater extent, the accuracy of the Drawings depends on the quality of instruments used to prepare them. The following is the list of Drawing Instruments and other materials required.

a) Drawing Board

b) T-square or Drafter

c) Drafting machine

d) Set Squares

e) Protractor

f) Drawing sheet

g) Drawing pencils

h) Compass

a) Drawing Board:

Drawing board is made from strips of well-seasoned soft wood generally 25 mm thick. It is cleated at the back by two battens to prevent warping. One of the shorter edges of the rectangular board is provided with perfectly straight ebony edge which is used as working edge on which the T-square is moved while making Drawings.

b) T-square:

T-squares are made from hard wood. A T-square consists of two parts namely the stock and the blade joined together at right angles to each other by means of screws and Pins as shown in figure 1A.2. The stock is made to slide along the working edge and the Blade moves on the Drawing board.

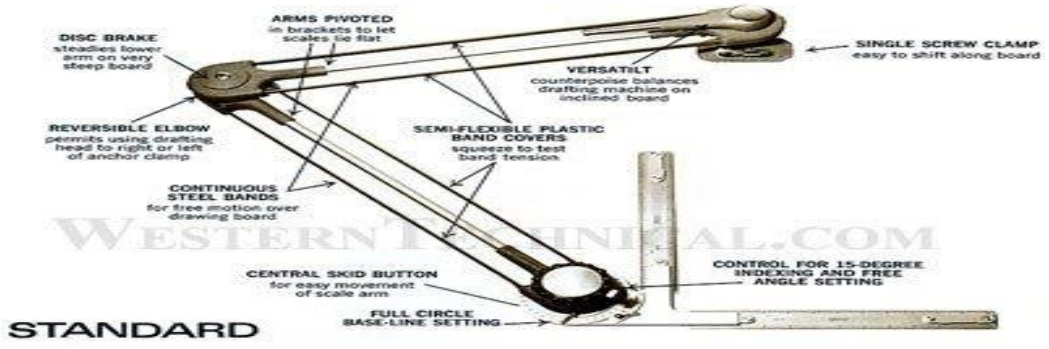
The working edge of T-square is used to draw parallel lines, vertical lines or inclined lines at 30°, 60^{0} to the horizontal using set squares.

C: Drafting machine (or Drafter):

In a Drafting machine, the uses and advantages of T-square, Set Square, scales, and protractors are combined. One end of the Drafter is clamped at the left top end of the Drawing board by a screw provided in the drafter.

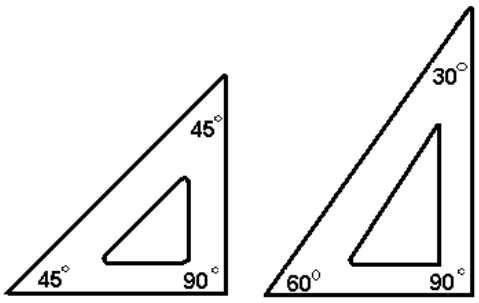
An adjustable head with a Protractor is fitted at the other end of the Drafter. Two blades made of transparent celluloid material are fitted to the adjustable head and are perfectly perpendicular to each other.

These blades are used to draw parallel, horizontal, vertical and inclined lines. The blades always move parallel to the edges of the board. Use of drafting machine helps in reducing the time required to prepare Drawing.



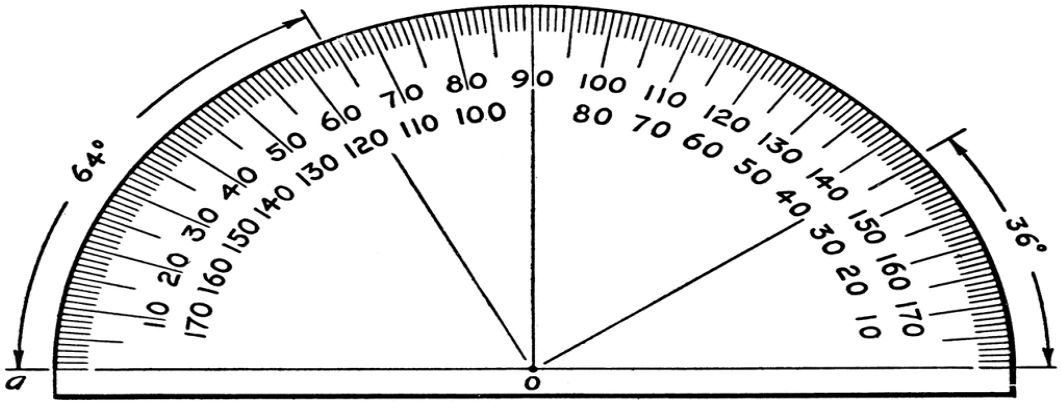
d) Set Squares:

Set squares are generally made from Plastic or celluloid material. They are triangular in shape with one corner, a right angle triangle. A pair of set squares (30°–60°) and 45° (45° set square are generally provided with Protractor) facilitate marking of angles as shown in figures 1A.4 and 1A.5. They are used to draw lines at 30°, 60° and 45° to the vertical and horizontal.



e) Protractor:

Protractors are used to mark or measure angles between 0 and 180°. They are semicircular in shape (of diameter 100mm) and are made of Plastic or celluloid which has more life. Protractors with circular shape capable of marking and measuring 0 to 360° are also available in the market.



f) Drawing sheet:

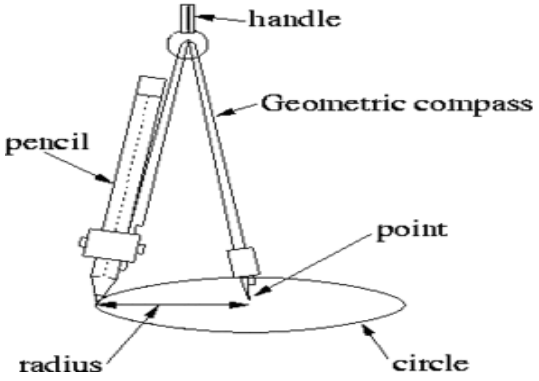
They are available in many varieties and good quality paper with smooth surface should be selected for Drawings which are to be preserved for longer time.

g) Drawing Pencils:

The accuracy and appearance of a Drawing depends on the quality of Pencil used to make Drawing. The grade of a Pencil lead is marked on the Pencil. HB denotes medium grade. Increase in hardness is shown by value put in front of H such as 2H, 3H etc., Softer pencils are marked as 2B, 3B, and 4B etc. A Pencil marked 3B is softer than 2B and Pencil marked 4B is softer than 3B and so on. Beginning of a Drawing may be made with H or 2H. For lettering and dimensioning, H and HB Pencils are used.

h) Compass:

Compass is used for drawing circles and arcs of circles. The compass has two legs hinged at one end. One of the legs has a pointed needle fitted at the lower end whereas the other end has provision for inserting pencil lead. Circles up to 120mm diameters are drawn by keeping the legs of compass straight. For drawing circles more than 150 mm radius, a lengthening bar is used. It is advisable to keep the needle end about 1mm long compared to that of pencil end so that while drawing circles, when the needle end is pressed it goes inside the drawing sheet by a small distance (approximately 1mm).



2.3 Organizational Structure

The company operates with the following hierarchical structure:

- Managing Director
- Project Manager
- Site Engineer
- Quantity Surveyor
- Architect
- Interior Designer
- Construction Workers
- Site Supervisors

Each role plays a critical function in ensuring smooth project execution. The Managing Director oversees all operations, while the Project Manager coordinates different teams. The Site Engineer ensures structural integrity, and the Interior Designer is responsible for aesthetics and space planning.

2.4 Departments and Their Functions

- **Design Department**: Responsible for architectural planning, drawings, and 3D visualization.
- **Construction Department**: Handles structural work, interlocking, and building processes.
- **Interior Design Unit**: Specializes in POP ceiling, painting, flooring, and finishing.
- **Procurement Unit**: Manages construction materials, equipment, and logistics.
- **Quality Control Unit**: Ensures materials and workmanship meet required standards.

CHAPTER THREE

SIWES ACTIVITIES AND EXPERIENCES

3.1 Tasks Performed

During the SIWES period, I was actively involved in the following activities:

3.1.1 Construction Work

- Assisted in site preparation, including clearing and leveling the ground for construction.
- Learned about foundation types and participated in excavation and concrete mixing for footings.
- Observed and assisted in block laying and brickwork.
- Helped with roofing processes, including trusses and roof covering materials.
- Understood reinforcement techniques for columns, beams, and slabs.

3.1.2 Interlocking Paving Work

- Assisted in ground preparation and leveling before interlocking installation.
- Learned about different interlocking block designs and patterns.
- Participated in the mixing and application of sand, cement, and stone dust for paving.
- Understood proper spacing, alignment, and edge finishing techniques.

3.1.3 Interior Design and Finishing

- Worked on POP ceiling installations, including moldings and ceiling panels.
- Assisted in painting and wall finishing using high-quality paints and coatings.
- Learned about different types of flooring materials, such as tiles, marble, and hardwood.
- Helped in space planning, furniture arrangement, and decorative elements.

3.1.4 Quality Control and Safety Measures

- Observed and applied safety guidelines on-site.
- Understood the importance of using high-quality materials in construction.
- Participated in quality inspections and rectifications.
- Learned about building codes and regulatory compliance.

3.2 Challenges Encountered

- Unpredictable weather conditions affecting construction schedules.
- Difficulty in handling heavy materials and tools.
- Ensuring precision in interior finishing and interlocking arrangement.
- Managing communication and coordination among different teams.
- Budget constraints leading to material shortages and project delays.

3.3 Skills Acquired

- Proficiency in reading architectural drawings and blueprints.
- Practical knowledge of construction techniques, interlocking, POP, and Traolin finishing.
- Improved project management, teamwork, and communication skills.
- Exposure to modern construction equipment and techniques.
- Understanding of sustainable building practices and material efficiency.

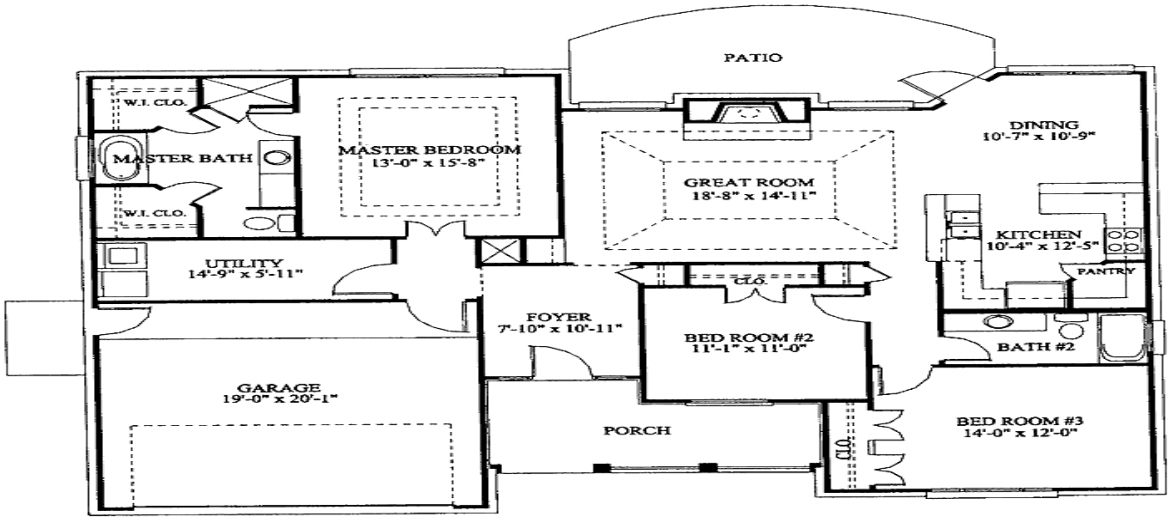
CHAPTER FOUR

4.0 SOME WORKS DONE AT THE PLACE OF ATTACHMENT

4.1 Apartment Plans

Plans of a 2-bedroom Apartment

Floor Plan: 2 bedroom, 2 bath, 1,055 sq. ft.



Floor Plan of a 3-bedroom bungalow Apartment

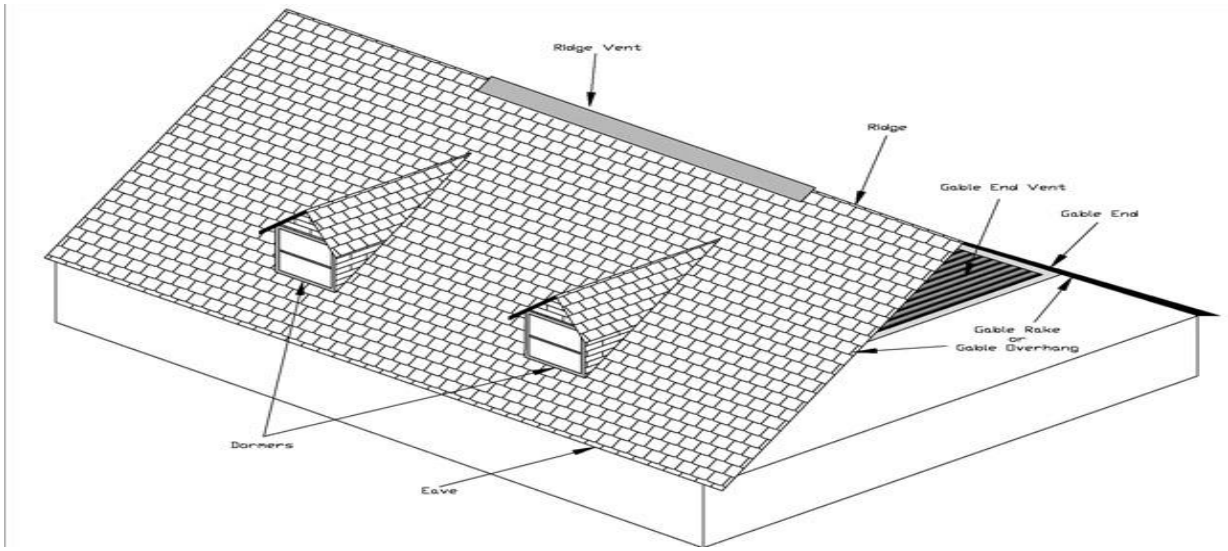
4.2 Gable Roof

Definition of a Gable Roof

A gable roof can be defined as a roof that has two upwards sloping sides that meet each other at the top, or the ridge of the roof. True gable roofs have identical angles on both sides and look like a symmetrical triangle when they are viewed front on. The traditional gable that most people are familiar has straight rooflines but there is another type of gable called a crow-step gable which, while still forming a triangle, has rooflines that features steps instead of a straight line.

Gable Roof Materials

Gable roofs are generally made from metal sheeting (such as Colorbond) or tiles (such as concrete or terracotta). What you choose will depend on factors such as the area or climate in which you live, the look that you want to achieve, what maintenance you are prepared to undergo, and your budget. Whichever material you opt for, your gable roof should be installed by a qualified roofer to ensure that there are no problems or risks of leaking, especially if you are using cross gables.



Picture of Gable Roof

Advantages and Disadvantages of Gabled Roofs

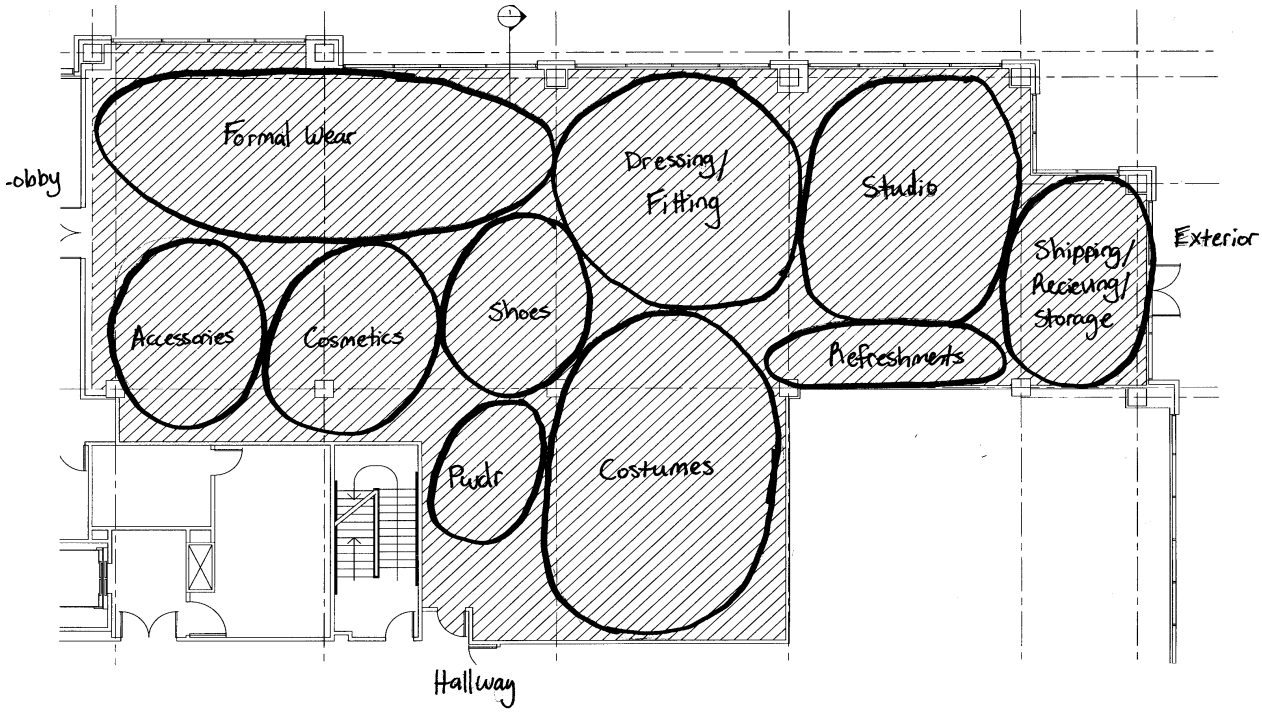
Of all roofing designs, the gabled roof probably has the most advantages, which is what makes it so popular. First, the simplicity of installation leads to a lower cost than other designs. Another advantage of this roof style is that because

it is sloped fairly steeply, it provides excellent water drainage, leading to fewer leaks and a longer life of the roof.

Gable roofs also provide the most ceiling space among all roofing designs, which is another reason it is so popular.

The main disadvantage of this type of roof is that its added height makes it especially vulnerable to damage from strong winds or tornados. You don't normally see this type of roof in areas where this type of weather is common; a tornado could easily tear a gable right off of a house.

4.3 Bubble Diagram of a Building



Usefulness of Bubble Diagram

Bubble diagrams are a useful design and analysis tool. They help us understand space adjacency, layouts, and relationships, traffic flows, and relative space sizes among other things. They are a visual tool for representation. We can use them to help us understand aspects of the design problem we are trying to solve without investing huge amounts of time with complex and detailed drawings. They can also be useful for ideation.

As a general rule, bubble diagrams are created after space adjacency analysis. There should be one bubble for each space listed on the adjacency analysis. The lines connecting those bubbles or the lack of lines are the depiction of the results of the space adjacency analysis. Dark, heavy lines represent close or high adjacency, dashed lines may represent some adjacency, and no line obviously represents a lack of adjacency. Sometimes in may be useful to actually sketch out a bubble diagram to help think through the space adjacency analysis. Seeing the spacing represented as bubbles may help you to think through the relationships between spaces and make decisions as to how strong or weak the adjacency should be.

There are other things you can do with a bubble diagram to make it more useful. You can draw them on top of a copy of the base plan. This will give you some preliminary ideas about how the spaces will actually fit into the area you have to work with. As mentioned previously making the bubble sizes larger or smaller to show the amount of relative space each will require is useful. You just have to remember that the actual space layout is not likely to be a circle. I have mentioned another technique in a previous post where you place a graphic such as a picture or drawing inside each bubble to represent what is actually going to be inside that space. This technique simply provides an additional layer of visual detail to help with your analysis of how the space will function together as a

cohesive whole. It can also be useful if you are going to show the bubble diagram to the client for clarification or feedback.

With all of the potential benefits of bubble diagrams it is important to keep a couple of things in mind. First, there are a lot of "rules" dictating how bubble diagrams should be drawn. For example, no bubbles should touch or overlap. No line should cross another line or another bubble. These constraints are intended to make sure your bubble diagram makes sense logically and that the spaces flow or connect in a consistent manner. It does not mean that your design implementation will follow those rules.

Second, the bubble diagram is a design and analysis tool. As such you should validate you input into its creation and the output from how you use it. As stated above, the bubble diagram is usually based on the space adjacency analysis. You should use the space adjacency analysis to check off or validate that you have address every space and every adjacency and non-adjacency. The same applies going on to subsequent steps. You might do an overlay of your bubble diagram over various form compositions. That in itself is a validation process. The next most likely step is to create functional diagrams. Again you should make sure that your functional diagram carries forward the adjacencies and other relationships expressed in the bubble diagram.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The SIWES training provided me with extensive practical experience in architectural and construction projects. The exposure to real-world projects enhanced my understanding of building design, material selection, and site management. Through hands-on participation in construction, interlocking, interior design, and ceiling finishing, I gained valuable skills that will be instrumental in my future career as an architect.

5.2 Recommendations

i. More hands-on training opportunities should be provided for students in the construction field.
ii. The use of modern construction technology should be introduced in training.
iii. Safety workshops should be conducted regularly to minimize site accidents.
iv. More emphasis should be placed on sustainable construction techniques and environmentally friendly materials.
v. Students should be encouraged to take part in real-life projects to develop a deeper understanding of construction practices.
vi. Organizations should provide structured mentorship programs for SIWES students.