CHAPTER ONE

1.0 INTRODUCTION

The student industrial works experience scheme (SIWES) is a skills development program establish by the Industrial Training Fund {ITF} in 1973 to bridge the gap between theory and practice among Engineering and Technology in Institution of Higher Learning in Nigeria. It provides for on- the job practical experience for student as they are exposed to work methods and techniques in handling equipment and machinery that may not be available in their institution. The scheme also prepares student for works situation they are likely to meet after graduation.

1.1 OBJECTIVE OF SIWES

The objective of the students industrial work experience scheme (SIWES) are

a. To provide an avenue for student in institution of high learning to acquire industrial skills and experience in their course of study.
b. To prepare student for the industrial work situation they are to meet after graduation.
c. To expose student to work method and techniques in handling equipment and machinery that may not be available in their institutions.
d. To Make the transition from school to the world of work easier and enhance student contacts for later job placement.
e. To provide student with an opportunity to apply their knowledge in real work situation thereby bridging the gap between theory and practical.

1.2 ROLE OF THE STUDENT DURING SIWES

My role as a SIWES student was to stay focused and learn from practical knowledge being impacted by my industry based supervisor and also take part in all the processes involved in production of bread as a final product. Also as a SIWES student, I am obliged to comply with the rules and regulations binding on all the workers in the industry and to take appropriate record of all training activities and other assignments during the SIWES program in my logbook.

1.3 THE LOGBOOK

Logbook is a book which is designed to assist the student to keep accurate record of their training during SIWES. It shows the department / section of the industry / company where a student has worked and the period spend in each department /section. The logbook must also be checked and signed by the supervisor.

CHAPTER TWO

2.0 GENERAL OVERVIEW OF THE INDUSTRY

2.1 UNITS IN THE ESTABLISHMENT

There are different units in the establishment which include

WEIGHING UNIT: this is an extension of the store unit where the weighing process are done.

MIXING UNIT: this is a production section, the equipment are of mechanical mixer and a mixing bowl for mixing all ingredients.

KNEADING UNIT: this is also a production section, whereby the mixed dough are milled

MOULDING UNIT: here the dough is scale into different size and mould.

PANNING AND PROOFING UNIT: these consist of a large space where creamed dough is being apply to the baking pan and expose to proofing.

BAKING UNIT: A section that is equipped with one of the best oven that is recommended by NAFDAC.

SHELF DRESSING, SLICING AND PACKAGING UNIT: Duster, dressing, knife, twist, nylon, slicer and shelves with which bread is properly arranged before distribution are placed here Deformed bread is also rejected here.

MARKETING DISTRIBUTION UNIT: this is a place where package bread are sold to the wholesaler retailer and final consumer

2.3 PROCEDURE FOR PRODUCTION OF BREAD

The following are the procedure for production of bread;

1. The weighed flour was poured into the mixing machine
2. The weighed ingredient (sugar, salt, yeast, preservatives.) where poured into the flour.
3. The ingredients were mixed together with the mixing machine to form dough
4. The dough was then placed on the milling machine.
5. It was rolled and mixed properly. (During milling, little butter and flour was added to it.)
6. The dough were sliced and weighed and kept on the table to be rolled.
7. After rolling, it will be creamed and then placed into the pan and left to improve for some minutes or even hours depending on the weather and season sometimes.
8. After the yeast proving. It was placed in the oven at 200^{o}c (temperature of the oven) and left for few minutes.
9. After baking, it was allowed to cool and then packaged inside each nylon according to their size.

CHAPTER THREE

3.0 MAJOR ACTIVITIES DURING SIWES

The major activities during the SIWES program are majorly on the production of bread. Bread is the final product of dough. The equipment used in bread production are Listed below:

- Mixing Bowl
- Kneading machine
- Divider
- Molding Machine
- Oven and Paddle
- Slicing Machine
- Baking pan
- Scale

3.1.1 MIXING BOWL

This is a bowl used in mixing of ingredient before kneading or milling. The mixing machine makes use of electricity for it operation while the bowl is protected against rusting through anti-corrosive paint in order to avoid contamination during mixing. The mixing bowl is operated manually by hand and is used only in the absence of the mixing machine, because mixing machine makes work faster and easier.

3.1.2 KNEADING MACHINE

Kneading machine is a equipment used to smoothen a rough dough. The machine is of two parts which are the miller / kneader and a motor engine which produce the driving force. Between these two is a belt, joining then together that makes it to be able to achieve its function. Careful attention is taken when operating the machine, because it is the most dangerous of all and its require an expert for operation

3.1.3 DIVIDER

This machine is very sample and faster. It divides the dough into same size as require. Large dough is cut, weighed and spread into the divider plate.

3.1.4 MOULDING MACHINE

This is a machine used for folding dough into the require for form

3.1.5 OVEN AND PADDLE

Oven is an equipment that provide the thermal energy needed for the baking of bread. There are different types of oven base on the material with which it is made of Earth oven, ceramic oven, metal oven, etc and there are many other ovens that are equipped with computer applications, thermostat, thermometer etc. It enables it to perform more functions. The thermometer helps to detect the temperature of the oven. Paddle is the tool that is used in loading and offloading an oven

3.1.6 SLICING MACHINE

This is a machine used in slicing of bread after baking. The machine used electric current in its operation.

3.1.7 BAKING PAN

Moulded dough are put into the baking pan for proofing, and later loaded into the oven. The shape and size determine the shape of the bread.

3.1.8 SCALE

The scale is used in weighing of ingredient before mixing. It is also used after milling to get the accurate measurement of the dough.

3.2 INGREDIENTS USED AND THEIR FUNCTION

The various raw materials used for bread production are:

1 Flour
2 Yeast
3 Salt
4 Sugar
5 Butter
6 Water
7 Improve
8 Enzyme dough conditioner
9 Preservative

FLOUR: This is the main ingredient used in production of bread, flour is a powdering substance which is been obtained from wheat (which is the most common), cassava, corn etc it has various brand name: like golden penny product, Dangote flour etc the net weight of a bag of flour is 50kg

YEAST: This ingredient brings about fermentation which causes the dough to rise. It is natural yeast. Its biological name is Saccharomyces cerevisiae. This is applied to the dough during mixing of ingredient; the amount of yeast needed for bread production depends on the weather and season

SALT: its main function is the add taste to the production although bread at times can be baked without salt but it will not be good as the product that has it. Industrial salt are used in baking, its chemical name is sodium chloride (Nacl).

SUGAR: This is one of the important ingredient used in bread production, its react with heat in the oven during baking produce a brownish colour at the crust of the bread, such reaction is known as criminalization reaction. It helps in fermentation it also aid taste of the product.

BUTTER: It is used during various stage of bread production. During the mixing stage it is added as an ingredient and is also added during milling to ensure a smooth

operation while using the milling machine. Butter is added to the molded dough and also in the inner part of the baking pan.

WATER: Water hydrates the yeast and the flour. It dissolved the sugar and the salt. The full stop amount of water in dough depends on how much water the flour can absorb.

IMPROVAL: This is the ingredient added to bread during mixing period its function are:

To Increase water absorption.

To Reduction of dough stickiness.

To simplify the work of the baker

ENZYME DOUGH CONDITIONAL (EDC): It helps in speeding up of the reaction of the yeast with dough. It is a liquid ingredient used in warm water.

1. it improves dough yield and increase loaf count
2. it helps in the improvement of gas oxidation in dough
3. it strengthens all dough and prevents it from falling
4. it strength the gluten structure of bread

PRESERVATIVE: This is an additive that helps in preserving the bread after baking. It increase it life span for about seven (7) days

3.3 BASIC PROCESSES IN BREAD PRODUCTION

In order to get a good product, these processes have to be followed.

3.3.1 WEIGHING OF RAW MATERIAL

The entire raw ingredients to be used for production are to be measure in order to get accurate weight of the product. Raw material weighed accurately will give good Palatability, nutritious and presentable product.

Below are the weights of ingredient used for a bag of flour

S/N	**INGREDIENT**	**WEIGHT**
1	A bag of flour	50kg
2	Yeast	This depend on temperature of the environment
3	Butter	_____
4	Improver	150g
5	Salt	400g
6	Sugar	5kg
7	EDC	100g
8	Water	15litre
9	Preservative	200g

The apparatus used in weighing is the weighing balance or scale which may be digital or analog and may be graduated in kilogram or in gram.

3.3.2 MIXING OPERATION

This is the second stage in bread production. It is a process in which the whole ingredient are mixing together. The solid material are first mixed together for about 7-10mins before the liquid ingredient which would have been mixed in a bowl will be added later, the ingredient may be mixed by hand using mixing bowl, but for higher productivity the mixing machine or mixer is used.

3.3.3 KNEADING / MILLING OPERATION

This process is done after mixing. The more the dough is mixed, the less kneading it requires and vice versa. The gluten is developed by kneading of the dough, also co_2 are evolve In kneading the dough, the dough is flattened with heel of the hand and folded over with the other hand. If the dough is soft as it should be, it is easy to knead, if the contain much flour, it becomes stiff and hard to fold, butter is added during kneading to enable a smooth operation.

3.3.4 CUTTING, WEIGHING AND DIVIDING OPERATION

After kneading, the smooth dough would to be divided depending on the size of the bread require. The dough is cut, weighed on a scale, at times a divider is used.T here are various size of bread;

i. Large
ii. Medium
iii. Short long
iv. Small

The material or instrument used are; knife, scale, pan and divider

3.3.5 MOULDING OPERATION

After cutting, weighing and dividing mounding is done. These take place in same section. Molding give shape to bread. The dough is pressed to allow air to escape, it is then folded from the side to form a rectangular shape, after which it is folded toward the front side and pressed firmly to seat, it is folded again and rotated to the desired shape. Molding of dough can also be used by the aid of molding machine.

3.3.6 CREAMING OPERATION

This is the process whereby a mixture of butter, groundnut oil and some other liquid ingredient are being rubbed on a molded dough purposely to have a good texture flavor and removal of bread easily from baking pan after baking.

3.3.7 PANNING OPERATION

An aluminum pan is used for baking because it is a good conductor of heat, the pan has to be cleaned by removing all dirt. The cream dough are carry into a pan and cover

‘Cap it up’cover are mainly used for the bread not to over rise during baking.

3.3.8 PROOFING

After panning proofing takes place when the dough rise after it has been left in a dry place for some time due to the action of some enzymes with Co_2gas.These enzymes are known as starch enzymes convert maltose to glucose and finally convert glucose to ethanol.

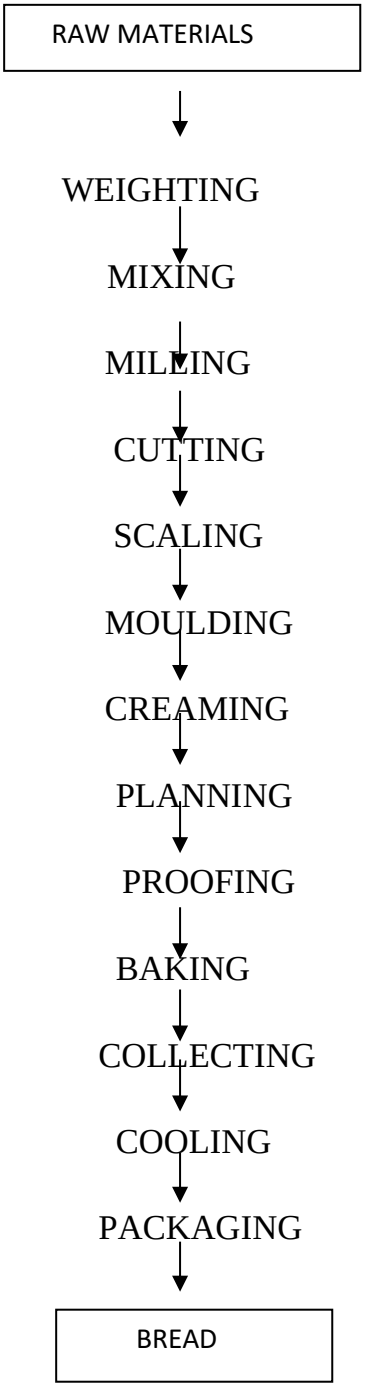
Below is Fermentation that occurs during proofing in bread production.

$$2C_6H_{12}O_6 + \text{yeast} \longrightarrow 2C_2H_5OH + 2CO_2$$

3.3.9 BAKING

Baking is an essential process in bread production. It is the process by which proofed bread is exposed to heat. The heat is supplied by an oven. An oven is thermally insulated chamber used for the heating, baking of a substance are commonly used for cooking. There are varieties of oven based on the materials which is made of Earth oven, ceramic oven, concrete oven, metal oven, etc and the fuel with which it operates, gas, coal, electricity, etc Oven also varies based on how it is controlled, modern ovens are equipped with thermostat which switches it On/Off at a particular temperature and some switching On/Off when the bread is baked to a desired degree or by considering the moisture content. The pans are set into the oven with a paddle to arrange then accordingly.

3.4 FLOW CHART OF BREAD PRODUCTION



CHAPTER FOUR

4.0 KNOWLEDGE GAINED DURING SIWES PERIOD

During my SIWES at Ultimate Delious Loaf, I gained more knowledge that have enlighten me in the field of food science and technology. It has also been a source of practical knowledge to establish or work in a bakery industry. I have been exposed to several machines and equipment's that I have not been able to operate before. With the support of my industrial based supervisor and some other workers, all process involved in the production of bread are now easier to me to carry out. The SIWES have exposed me to the field of entrepreneurship.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The SIWES programme undergo at Ultimate Delious Loaf, afforded me in depth exposure to all processes involved in the production of bread. The programme has been highly enlightening, beneficial, interesting and also as job opportunity. The objective of which the scheme was set was however undergone and achieved.

5.2 RECOMMENDATION

Having completed the four months industrial training, I realized that it is beneficial for all students to undergo such training to assist them acquire needed practical knowledge which will guide them to working or establishing an industry.

So I recommend that the following under listed parts should be implemented,

(a) There should be a proper supervision of the student concerned by both ITF officials and the institute based supervisors.
(b) Sending students specifically to establishment where the stipulated aims and objectives of SIWES would be achieved.
(c) Payment of befitting students allowance to assist in student's finances during the period of training.