

APPENDIX 'C'

FOR TEACHERS

LESSON OUTLINE

A. INTRODUCTION

In the following pages we intend to acquaint you with the outlines of the lessons which you are to teach to your classes during the course of the present study. As far as possible please try to conform your lessons to the outline provided.

In all, eight lesson outlines have been given. These have been drawn from Chapters 5, 6 and 7 of the text book on general science prescribed for VII class.

Each lesson outline contains the following :

- (a) the major idea to be developed in the lesson,
- (b) the subconcepts to be developed,
- (c) the terms to be introduced,
- (d) the teaching aids to be used.

It is emphasized here that attempt should be made in each lesson to achieve not only knowledge objectives but also understanding and application objectives so that at the end of the lessons students not only recall and recognise facts, terms, definitions, concepts, principles, processes etc., but are also able to translate, interpret, extrapolate the knowledge acquired by them and also develop the ability to apply ideas, rules of

procedures and methods to new situations. Attempt to achieve these higher objectives of instruction may be considered as important.

B. CHAPTERS AND RELATED LESSONS :

		<u>To be covered in :</u>
<u>Chapter 5</u>		
Lesson 1	Concept of pollination; self and cross pollination; significance of pollination.	One period
Lesson 2	Agencies of cross-pollination; artificial pollination	One period
Lesson 3	Fertilization	One period
<u>Chapter 6</u>		
Lesson 4	Seed: its external and internal structure; concept of monocotyledons and Dicotyledons.	One period
Lesson 5	Germination of seeds; essential conditions for seed germination.	One period
<u>Chapter 7</u>		
Lesson 6	Different types of Plants : (a) Bacteria-study of some harmful and harmless bacteria.	One period
Lesson 7	Different types of Plants : (b) Fungi and ferns	One period
Lesson 8	Plants in the service of men; concept of interdependence of plants and animals.	One period

C. LESSON OUTLINE :

Lesson 1 Concept of Pollination; self and cross Pollination; Significance of Pollination

(a) Major idea :

1. Pollination is the first step towards fruit and seed formation.
2. Pollination is the process which helps to achieve - Union of the male and female reproductive units.

(b) Concepts to be developed :

1. In all flowering plants pollination takes place.
2. Pollination leads to fertilization.
3. Transference of pollengrains from another to stigma is called pollination.
4. Pollination can be of two types - self and cross.

(c) Terms to be introduced :

1. Pollination
2. Self-pollination(Autogamy)
3. Cross-pollination(Allogamy)
4. Ferlization

(d) Teaching aids :

- (i) B.B. diagram 5.1.on page 45
- (ii) B.B. diagram 5.2 on page 46
- (iii) B.B. diagram explaining cross pollination

Lesson 2

Agencies for cross-pollination, Artificial  
Pollination

(a) Major ideas :

1. Although plants cannot move bodily to achieve the union of the male and female reproductive units, agencies like wind, water, insects & other animals individually help them to do so.
2. The flowers are modified in such ways as to facilitate pollination.

(b) Concepts to be developed :

1. Some Flowers are pollinated by insects
2. Some Flowers are pollinated by wind
3. Some Flowers are pollinated by water
4. Some Flowers are pollinated by animals
5. Flowers have certain specific structural characters as to suit the agency by which they are pollinated.
6. ~~xxx~~ Plant breeds can be improved by artificial pollination.

(c) Terms to be introduced :

- |                |               |
|----------------|---------------|
| 1. Entomophily | 2. Anemophily |
| 3. Hydrophily  | 4. Zoophily   |

(d) Teaching aids :

- (i) B.B. diagram 5.3, 5.4, 5.5 showing pollination by wind, water and insects respectively.
- (ii) B.B. diagram 5.6 on page 49 showing artificial pollination.

Lesson 3 Fertilization

(a) Major ideas :

1. Pollination leads to fertilization.
2. Fertilization is the process of union of the male and female reproductive units.

(b) Concepts to be developed :

1. Fertilization is essential for fruit and seed formation.
2. In this process, pollen germinates in another tube.
3. Another tube unites with the ovules of the Ovary leading to union of gametes.
4. After fertilization, ovules form seed and ovary the fruit.

(c) Terms to be introduced :

1. Pollen grain Germination
2. Anther tube, gametes
3. Union
4. Ovules.

(d) Teaching aids :

- (i) B.B. diagram 5.7 on page 49 showing germination of pollen grain.
- (ii) B.B. diagram 5.8 on page 50 showing the process of fertilization.

Lesson 4     Seed : its external and internal structure :

Concept of monocots and dicots

(a) Major ideas :

1. Seeds are formed due to the process of fertilization.
2. Seed grows to a new plant.

(b) Concepts to be developed :

1. Seed is covered with a seed coat which may be soft or hard.
2. Seed coat is the preventive skin of the seed.
3. Food is stored in cotyledons.
4. Cotyledons may be one or two in number.
5. Embryo, radicle and plumule lie in the cotyledons.
6. Embryo grows into seedling.
7. Food stored in the cotyledon is in the form of starch.

(c) Terms to be introduced :

- |               |               |
|---------------|---------------|
| 1. Seed coat  | 2. Fruit Coat |
| 3. Cotyledons | 4. Embryo     |
| 5. Radicle    | 6. Plumule    |

(d) Teaching aids :

- (i) Specimen of gram seed soaked in water a day earlier and its diagram on B.B. vide 6.1 on page 53 showing external structure of gram seed.
- (ii) B.B. diagram 6.2 on page 54 showing the internal structure of gram seed.

(iii) B.B. diagram 6.3 on page 54 showing structure of maize seed,

Lesson 5. Germination of seeds : Essential conditions for germination

(a) Major ideas :

1. Germination is the process in which embryo develops into new plant.
2. Before germination, the embryo lies in the dormant state.

(b) Concepts to be developed :

1. Embryo grows in the new plant.
2. On germination, radicle gives rise to roots and plumule forms the shoot.
3. Root moves away from light and towards dark.
4. Shoot moves towards light and away from dark.
5. Certain conditions are essential for activation of dormant seed.
6. Essential conditions are Normal Temperature, Water and Air.

(c) Terms to be developed :

- |                |                  |
|----------------|------------------|
| 1. Germination | 2. Dormant state |
| 3. Hypocotyl   | 4. Epicotyl      |
| 5. Root        | 6. Shoot         |
| 7. Geotropism  | 8. Phototropism  |

(d) Teaching aids :

(d) Teaching aids :

- (i) B.B. diagram 7.3 on page 60 showing different kinds of bacteria.
- (ii) B.B. diagram 7.4 on page 61 showing nitrifying bacteria in root nodules.
- (iii) B.B. diagram 7.5(a) and (b) on page 62 showing (a) Vibrio cholera and (b) bacillus tuberculi.

Lesson 7

Different types of Plants : Fungi & Ferns

(a) Major ideas :

- 1. Fungi are the non-chlorophyll plants.
- 2. Ferns do not have real seeds.

(b) Concepts to be developed :

- 1. Fungi grow in moist and damp places.
- 2. Fungi are parasitic plants.
- 3. Some Fungi are poisonous.
- 4. Some Fungi are edible.
- 5. Fungi are the new source of food.
- 6. There is a food problem in the world.
- 7. Ferns do not bear true flowers.
- 8. Ferns are decorative plants.
- 9. Ferns are cultivated for airy environment and near the sanatorium.
- 10. Fern leaves bear spores which are false seeds.

(c) Terms to be introduced :

- 1. Chlorophyll
- 2. Spores
- 3. Parasite
- 4. Decorative and Ornamental Plants

5. Sanatorium
6. Edible food source

(d) Teaching aids :

Showing diagrams given in the book on black board.

Lesson 8     Plants in the Service of Mankind; Concept of interdependence of plants and animals

(a) Major Ideas :

1. Plants are of different kinds in nature.
2. Plants are found in every environment.
3. Plants and animals are interdependent.

(b) Concepts to be developed :

1. Plants are varying in size and shape.
2. Some plants are microscopic and others are large trees.
3. Plants are adapted to its environment.
4. Some plants are xerophytic.
5. Some plants are aquatic.
6. Plants play an important role in our life.
7. Plants are beneficial for animals.
8. Some plants are harmful in nature.
9. Wood forms the source for furniture and fuels.
10. Plants provide food, clothes, fuel, medicine to man.

(c) Terms to be introduced :

1. Variation    2. Adaptation    3. Environment
4. Xerophytic    5. Aquatic        6. Symbiosis
7. Toxic