

Lesson 2: Flowering and Non-flowering Plants

Duration: 5 Days

I. Objectives:

1. Describe the modes reproduction in flowering and non-flowering plants such as moss, ferns and others.

II. A. Materials:

Pictures of flowering and non-flowering plant

Real flowering and no-flowering plant

Powerpoint presentation about the modes of reproduction of moss and fern.

B.References: www.smartsciencepro.com

C.Process Skills : Describing, Identifying, classifying

Values Integration: Appreciation and caring of God creations.

III. Learning Tasks:

Day 1

A. Engagement:

1. Say: "Who loves flowers? I hope you do. Flowers are a beautiful creation by the nature and we all love flowers to some extent. Flowering plants make the world smell better"
Can you identify flowering and non-flowering plants?

B. Exploration:

A. Field Trip

1. In preparation for going outside, teacher leads discussion about appropriate behaviours and safety precautions.
 - a. Personal Safety
 - b. Safety of others
 - c. Care and Respect for the environment
2. Bring pupils to the school garden.
3. Instruct them to go to the school garden in pairs.
4. Guide the pupils an observation strategies:
 - a. Identifying the name of plant .
 - b. Classify plants as to flowering or non-flowering plant.
5. Tell pupils to start on their investigation on the plants found in the school garden.

Guide them to observe the appearance and body parts.They can even bring cameras with them and take photos of the plants they saw.

6. Throughout the field observation. Observe and give specific feedback relevant to what the pupils are expected to do.

7. When the pupils are finished, tell them to leave the area without picking any specie or live plants.
8. Return to the classroom.

C. Explanation:

Day 2-3

1. In the classroom, ask the pupils to share their observations and insights. Ask a group member to report the group result.
2. Discuss and answer the guide questions:
 - a. What plants did you observe?
 - b. Which are flowering plants?
 - c. Which are non-flowering plants?
3. Guide the pupils in constructing the main idea or concept of the lesson by asking these questions:
 - a. What is a flowering plant?
 - b. What is a non-flowering plant?
 - c. What are some characteristics of angiosperm?
 - d. Describe the dicotyledonous plants and give some example?
 - e. Describe the monocotyledonous plants and give some example?
 - f. Give the differences of gymnosperm, bryophyte, pteridophyta.

Background Information for teachers:

Flowering Plants

As you know, Flower is the reproductive organ of the plant. Flowers can be composite or simple. Anyway using flower as the classification criteria makes this a natural classification.

Flowering plants are also known as Angiosperms.

Angiosperms

There are many characteristics of Angiosperms as mentioned below.

- Angiosperms are plants that have flowers and their reproduction is done by flowers.
- All flowering plants produce seeds. and it is covered by a fruit.
- Angiosperms have complicated flowers with complicated structure.
- These are the most developed plants in the world.
- There are 2 types of Angiosperms namely Dicotyledonous Plants and Monocotyledonous plants.

1. Dicotyledonous Plants

Dicotyledonous flowering plants are the widely expanded around the world. The seed of this type of plants have 2 cotyledons inside it. Also the root system has a long tap root. The leaves have webbed veins and the flowers have 5 or multiple of 5 petals. Examples for Dicotyledonous plants Jak, Mango, Lemon, Apple, Tomato

2. Monocotyledonous Plants

Monocotyledonous flowering plants are very few when compared to dicotyledonous plants. These plants don't have a tap root system, but a fibrous root system. The seed has only 1 cotyledons and the veins of the leaves are parallel. Number of petals in the flowers are 3 or multiples of 3. Examples for Monocotyledonous plants Coconut, Wheat, Palm, Rice, Garlic

Non-Flowering Plants

Non-flowering plants do have reproductive organs available in the flowers, but these are not complicated as Dicotyledonous flowers. We can further classify non-flowering plants as with seeds and without seeds.

Gymnosperms

Gymnosperms are plant with seeds and the embryo is inside a seed. The seed is not covered not not enclosed in a fruit. These are the less advanced type of seed plants. Examples for Gymnosperms plants Yews, Ginkgo, Cycads, Conifers, Pine

Bryophyta

Bryophyta doesn't have seeds. There are so many species under this type and body of the plant may be a thallus. Sometimes they do have leaves. There are no true roots, but roots like structures available. These are also known as Rhizoids and grow on moist walls and ground. Examples for Bryophyta plants Mosses, Liverworts, Hornworts, Marchantia, Pogonatum

Pteridophyta – Ferns

Stem of these plants may be an underground rhizome or an Aerial stem that grows straight. These have well developed Xylem and Phloem vascular tissues. The leaves have spores and also don't have seeds. Examples for Pteridophyta plants Nephrolepis

D. Elaboration

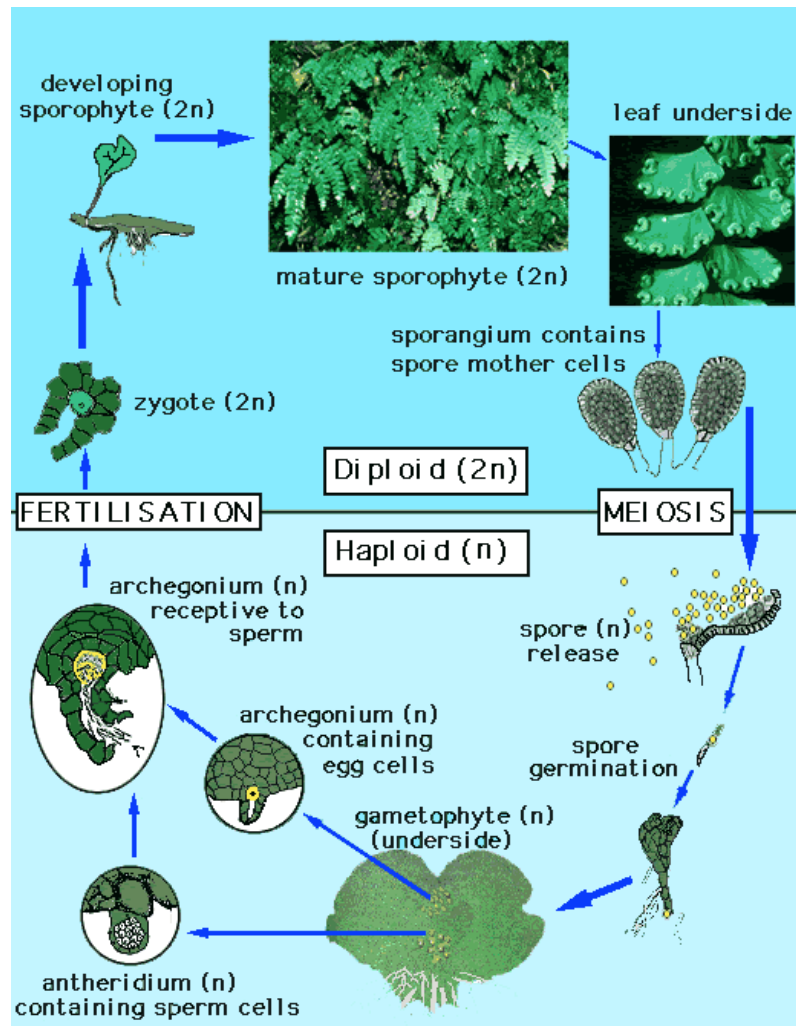
Day 4-5

1. Say: We have learned flowering and non-flowering plants. Lets widen our knowledge through powerpoint presentation about the modes of reproduction of moss and fern.
2. During the presentation please take note some important details about the modes of reproduction of moss and fern. Please be guided by the following questions:
 - a. Describe the modes of reproduction of moss.

b. Describe the modes of reproduction of fern.

E. Evaluation:

Describe the mode of reproduction of fern.



IV. Assignment

Draw the life cycle of a moss in a bond paper.