Plant Life Cycles

Strand Life Processes

Topic Investigating plant life cycles

Primary SOL

K.7 The student will investigate and understand basic needs and life processes of plants and animals. Key concepts include
- c) plants and animals change as they grow, have varied life cycles, and eventually die.

Related SOL

K.7 The student will investigate and understand basic needs and life processes of plants and animals. Key concepts include
- b) plants need nutrients, water, air, light, and a place to grow to survive;
- d) offspring of plants and animals are similar but not identical to their parents or to one another.

K.9 The student will investigate and understand that there are simple repeating patterns in his/her daily life. Key concepts include
- b) the shapes and forms of many common natural objects including seeds, cones, and leaves;
- c) animal and plant growth.

K.10 The student will investigate and understand that change occurs over time and rates may be fast or slow. Key concepts include
- a) natural and human-made things may change over time;
- b) changes can be observed and measured.

K.1 The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which
- a) basic characteristics or properties of objects are identified by direct observation;
- f) observations and predictions are made for an unseen member in a sequence of objects;
- h) observations are recorded;
- i) picture graphs are constructed;
- j) unusual or unexpected results in an activity are recognized;
- k) objects are described both pictorially and verbally.

Background Information

Plants change as they grow and eventually die at the end of their life cycle. Plants start as seeds and go through several changes before they become mature plants. Seeds come in various sizes, and the sizes can range from very small like a mustard seed to very large like a coconut. The size of the seed does not always determine the size of the mature plant. A good example of this is an acorn that is the seed for the oak tree. A flowering plant's life cycle includes a seed, germination of the seed, growth of the stem and roots, growth of leaves, growth of flowers, fertilization (pollination) of the flowers, production of fruit/new seeds, and death. Some plants die within one year, while others live for hundreds of years.

Materials

- Books about plant life cycles
- Tree and bean seeds
- Small plastic bags
- Paper towels
- Digital camera
- Projector or document camera
- Paper
- Crayons/pencils
- Pictures of plant life cycle

Vocabulary

plant, life cycle, change, size, leaves, branches, fruits, seeds

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Read aloud a book about the life cycle of a tree.
2. Discuss that trees grow from seeds.

Procedure

1. Collect some acorns, maple seeds, or other tree seeds to observe. Plant the seeds in pots, and let them develop into seedlings in the classroom. Be sure to have students observe their growth frequently and record it in a science journal. Take students outside to observe mature trees. Have students compare these trees with the seedlings. Ask: "What's different?" Some differences expressed might be size, shape, number, and size of leaves.
2. Discuss the life cycle of a plant that includes seeds; growth of the roots, stems, leaves, and flowers; reproduction; and eventually death.
3. Explain to students that they will each be given a seed to plant, and they will document the steps of a plant's life cycle. Give each student a sealable plastic bag, a paper towel, one bean seed, and a piece of tape. Have students use a permanent marker to write their names on their bags.
4. Have students soak their paper towels in water and then put their bean seeds inside the folded wet paper towels. Have them open the plastic bags and put the wet paper towels with the seeds in the bags. Find a window that has access to daily sunlight, and tape the plastic bags to the window. Have students check their bags each day to make sure the paper towels stay moist.
5. During the following days, provide time for students to observe their bags and note any changes to their seeds in their science journals. Have them document changes through pictures or simple sentences. (If possible, have them take pictures of any changes in their bags.) The changes they should see are:
    - Their seed should begin to develop roots.
    - A stem should soon be visible.
    - Leaves should be next.

- Flowers, then seeds will show.

6. If students have taken pictures of the changes to their seeds, display those changes electronically. Have students identify the different stages of the plant life cycle and place the photographs in the correct order.

Assessment

- **Other**
  - Have students fold a piece of paper to create four equal sections and draw the stages of a flowering plant's life cycle.
  - Have students sequence previously prepared pictures of the life cycle of the plant.

Extensions and Connections (for all students)

- Measure the length of time (days) it takes for the bean to grow roots or a stem. Create a graph comparing the amount of time each student's bean seed took to grow.
- Use photo presentation software to create a presentation illustrating the stages in the life cycle of a plant.
- Create a mystery garden. Every afternoon, have students plant the seeds that they collect from their lunches.
- Use photos taken by the class to sequence the growth of a plant.

Strategies for Differentiation

- Give students who are still developing fine motor skills large seeds to handle and plant.
- Use a two-column graphic organizer to glue a seed on one side and a picture of the tree the seed will grow into on the other side.
- Use photographs taken of the bean plants and tree seedlings planted in the classroom to sequence the actual plant or seedling in the different stages of growth.