GRADE 2 ~ LIFE SCIENCES

TOPIC: Cycles of Living Things

LESSON: #6 Plant Needs (Part 2-Optional)

CONCEPT/STANDARD:
Plants and animals have predictable life cycles.

SUB CONCEPT:
2e Students know light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants.

STATEMENT OF LESSON OBJECTIVE:
Students will observe the effects of light on plants. Students will learn or review the steps in the Scientific Method.

VOCABULARY
Scientific Method: a process used by scientists to develop theories; usually includes developing a question, a hypothesis, a test or experiment to prove or disprove the hypothesis, and a conclusion used by scientists
Light: an element needed by plants for photosynthesis to occur
Soil: the loose top layer of the earth’s surface

MATERIALS
For the Teacher:
-Scientific Method chart
-3 clear, plastic cups with soil
-1 clear, plastic cup without soil
-Awl or 4”-5” nail
-Paper towels
-Transparency: What Do Plants Need to Grow?

For each student:
-1 clear, plastic cup with soil
-2-3 seeds (pumpkin)
-Worksheets: What Do Plants Need to Grow?

TIME FRAME:
Approx. 60 Minutes
plus One-Four Weeks/observation

TEACHER PREPARATION:
2. If you studied the life cycle of the pumpkin in the fall, pumpkin seeds would be good to use.
3. Heat the nail or awl over a candle. Push through the bottom of the plastic cups to make 3-4 holes for drainage.
4. Fill cups 2/3 full with moistened soil.
5. Make transparency and student worksheets of What Do Plants Need to Grow?
BACKGROUND INFORMATION:
The Scientific Method consists of the following parts: a Question (what you want to find out), a Hypothesis (your prediction), a Test or Experiment (this proves or disproves your hypothesis) and the Conclusion or Results (what you learned). If you are testing the effects of light on a leaf, you should compare a leaf that receives light with a leaf deprived of light. The only factor that should vary is light. You should pick two leaves from the same plant.

Plants need water, light, soil, and space to grow. Water helps soften the seed coat and is necessary for photosynthesis. Soil provides the plant with water and minerals. Light is necessary for photosynthesis. Plants need adequate space to grow. Overcrowding of plants will result in weak plants as they have limited resources (water and minerals).

LESSON FOCUS:
- What are steps in the Scientific Method?
- What are a plant’s needs?

PROCEDURE:

Part 1 – Background information:
1. Review or teach the Scientific Method.

Part 2 - What Are a Plant’s Needs?
2. Discuss a plant’s needs (water, light, soil, and space).
3. Demonstrate how to plant seeds.
4. Have students plant 2 – 3 seeds in their labeled cups.
5. Water cups and set outside.
6. These will be the “control” cups. They will represent normal conditions and will be compared to the “experimental” cups you will prepare next.

Part 3 - Plant Experiments:
7. Ask the questions:
   a. What happens when a plant does not get water?
   b. What happens when a plant does not get light?
   c. What happens when a plant does not have soil?
   d. What happens when plants are too crowded?
8. Students should record a hypothesis for each question.
9. Plant seeds in one cup, but do not water. Label the cup “No water.” Place outside with student’s cups (control cups).
10. Plant seeds in another cup. Label it “No light.” Water it and place in a closed box or cupboard.
11. Line the sides of one empty cup with paper towels. Moisten the paper towels thoroughly. Insert seeds between the sides of the cup and the towel. Label it “No soil.” Place outside.
12. Plant 8 – 10 seeds in one cup. Label it “Too many seeds.” Water and place outside.
13. Water all cups, except for the “No water” cup regularly.
**Part 4 - Results of Plant Experiments:**

14. Record results of experiments during the four-week period
15. Teacher can have students record their observations in a journal.

**CLOSURE/ASSESSMENT:**

- After the three to four week experiment time, discuss:
  - **What do plants need to grow?**
  - **What does the soil give the plant?**

**ATTACHMENT:**

- “What Do Plants Need to Grow?” worksheet (2 pages)

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**Grade:** 2nd
Name__________________________________

What Do Plants Need to Grow?

**Question:** What happens when a plant does not get water?

**Hypothesis:** __________________________________________________________

**Results:** ____________________________________________________________

<table>
<thead>
<tr>
<th>My Cup</th>
<th>“No water” Cup</th>
</tr>
</thead>
</table>

**Question:** What happens when a plant does not get light?

**Hypothesis:** __________________________________________________________

**Results:** ____________________________________________________________

<table>
<thead>
<tr>
<th>My Cup</th>
<th>“No light” Cup</th>
</tr>
</thead>
</table>
**Question:** What happens when a plant does not have soil?

**Hypothesis:** ____________________________________________________________

**Results:** ________________________________________________________________

| My Cup | “No soil” Cup |

**Question:** What happens when plants are too crowded?

**Hypothesis:** ____________________________________________________________

**Results:** ________________________________________________________________

| My Cup | “Too many seeds” Cup |