

Science Lesson How Do Plants Grow?

Grade Level: 1st

Number of Students: 20

Date: 2/25/20

Lesson Goals

Central Focus/Big Ideas of Lesson:

Scientists must be able to observe and identify key factors that interact with one another in the natural world. The ability to identify the similarities between the growth of plants and the growth of humans enables students to comprehend how elements in nature affect not only that which is part of the environment but themselves as well. This, in turn, allows students to make connections such as how to care for the surrounding environment is the same as how to care for themselves, supplying enough fresh air, sunlight and water can promote healthy living. The teacher will practice modeling strategies and supply certain visuals to illustrate a plant's growth process, certain parts of the plant and their use, and the circle of life. Students will be able to apply their knowledge in the real world by developing their character traits, such as empathy, in order to care for another living thing.

Standard(s) Addressed:

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.
- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.
- Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents.
- Scientists look for patterns and order when making observations about the world.
- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Lesson Objectives and Demands

Learning/Content Objectives:

At the end of this lesson, students will be able to determine how plants grow by observing the stages of a plant life cycle and plant their own seed for observation.

The students will observe and describe changes to a Pinto bean seed as it sprouts into a seedling.

Language Objectives/Key Vocabulary in Lesson:

The teacher will model appropriate language for students to utilize while identifying and labeling the parts of the plant and the growth stage the plant is in. Students will be expected to use specific vocabulary listed below and label each accordingly on a corresponding worksheet. More so, students will also have the opportunity to use this language when providing feedback during the guided practice portion of the lesson and speaking with one another during their work time or during designated sections of the lesson. The expectation for students to utilize the specific vocabulary will guide students to think and speak more actively as scientists. This vocabulary will be displayed on a vocabulary wall with an image and its appropriate definitions for reference.

Words to Know:

- Lifecycle
- Seedling
- Germinate
- Cotyledons

Lesson Considerations

Materials:

- An oak tree seedling in a flowerpot (grown prior to the lesson)
- Several different flowers and fruits (to show the seeds) and a tray to hold the seeds
- Interactive Science book and Science Journal (one of each per student)
- Students will have one clipboard per person and a pencil
- Chart paper with three questions intended to be used for the exit ticket (the questions will be written out prior to the lesson)
- Exit ticket: a green and white leaf made from construction paper - one per student (the white leaf will be where the students draw their illustration of the plant life cycle, then they will glue it to the green leaf which is one inch larger)

Materials for small groups:

- 6 Pinto bean seeds
- A paper towel
- Resealable clear plastic bag (sandwich size)

- Hand lens
- Tape
- Water (teacher use)

Advance Preparation: for each group fold a paper towel to 1/4 of its usual size. Wet it so it's damp but not dripping.

Prior Academic Learning and Prerequisite Skills:

Students will be recalling their prior knowledge from their science lessons the year prior, in second grade. This lesson will provide a fresh and new way of viewing the information they have learned in the past. Blending new and prior information will give students the opportunity to associate the new vocabulary and concepts presented in this lesson with the knowledge they have on plants and plant life from the years before. The teacher will guide students to access their prior knowledge through discussion. Familiar vocabulary, learned prior, including root, stem, seeds, and leaves. This prior knowledge will help students scaffold on the concepts they already comprehend to create a deeper understanding of the concepts presented in this lesson.

Misconceptions:

Some common misconceptions may occur when using the vocabulary for the stages of the plant. This lesson will be delivered with a simple execution - utilizing visuals to give students the opportunity to comprehend which plant growth stage is which, where seeds come from and what parts of the plant help it survive. It will be interactive, allowing students who understand concepts in a kinesthetic way to dive into the experiment. This lesson will also feature auditory features allowing those who learn by hearing to grasp the concepts accordingly as well. The deeper and thought-provoking information can be accessed in a way that is still comprehensible when explained for a classroom filled with diverse learners. More so, if the children are having difficulty understanding the steps of a life cycle in a pepper plant, then have the children look at each illustration and describe the steps one by one.

Experiment Steps for Students:

Put the seeds and towel in a bag. Seal. Put in a warm place.

Observe every other day. Record.

Predict what will happen next.

Experiment Steps for Teacher:

Label each group's bag and place the bags in a warm spot, on the windowsill so the seeds receive enough sunlight to grow well.

Add drops of water to dry bags as needed.

Keep the bags sealed because mold may grow.

Lesson Plan Details:

Lesson Introduction:

Activate prior knowledge by calling the children's attention to the envision it! section in their Interactive Science workbook. At the top of page, read the envision it! directions aloud with the children.

“Tell what you know about seeds and plants.”

The children's answers should show they know that many plants grow from seeds. Have the children relate their experiences with different seeds, such as apple seeds. Then ask if they have ever planted seeds before.

Before continuing the lesson, ask a volunteer to read the “I will know” section at the top of the page. Help the children to connect these ideas to their world.

“I will know how plants grow.”

Learning Activities:

The teacher will place the potted oak seedling on the table in the front of the room.

Ask the students what they notice and call on a few students to share their observations.

Then, ask the students to turn to page 69, and read the following section aloud:

Seeds to trees

“The way a living thing grows, and changes is called a life cycle. An Oak seed is called an acorn. Plant an acorn in the ground. A seedling is a very young plant. An Oak seedling has a thin stem. An Oak seedling has small leaves. The seedling grows into a tall tree.”

Point to the following features on the oak seedling in the flowerpot: a thin stem and small leaves.

Ask the students to draw a line from the label to the picture in their Workbooks.

Build Background:

Tell the children that plants are living things. Explain that all living things change as they grow and that these changes are called a life cycle.

Compare and contrast:

Ask the following questions:

“How is an Oak seedling different from a grown Oak tree? How are they alike?”

Call on a few students to share their responses.

Possible answer: The seedling is smaller and has a thin stem instead of a thick trunk. They both have leaves.

Draw Conclusions:

Ask the following question:

“When an Oak seedling grows into a tall Oak tree, how might another life cycle begin?”

Call on a few students to share their responses.

Possible Answer: An Oak seed will drop from the tree to the ground and may start to grow.

Then ask the students to turn to page 71 and read the page aloud:

Life cycle of a plant

“A seedling grows from the seed. Roots grow downward. A stem grows upward. The plant grows into an adult plant. Some plants make flowers. The flowers make seeds inside fruits. The seeds may grow into a new plant and the life cycle starts again.”

Then call on a few students to recall the information by answering the following questions:

What does the pepper plant life cycle start with?

Possible answer: the life cycle starts with the pepper seed.

How does the pepper plant grow?

Possible answer: the roots and a stem grow from the seed.

What might happen if a seed does not get water?

Possible answer: the seed would not grow.

Teach with Visuals:

Have the children study the diagram on page 70 and read the information provided.

Then ask the following question:

“In what direction do the roots and stem of a seedling grow?”

Possible Answer: The roots grow down, and the stem grows up.

Cause and Effect:

Ask the following question:

“How does a flower affect whether another pepper’s life cycle starts?”

Possible answer: The flower makes seeds that may start the cycle again.

Clarify:

“What changes happen as the pepper plant seedling grows into an adult plant?”

Possible answer: The plant grows taller, more leaves and stems grow, then flowers and peppers form.

Elaborate:

Ask the students to point to the pepper seed where the life cycle starts. Then, explain:

“The seed has an outer covering called a seed coat. A seed coat protects a seed until it is ready to sprout.”

Ask the following question:

“How is a seed coat important to a pepper plant?”

Possible Answer: The seed coat protects the seed which helps make it likely that the seed will grow into a pepper plant.

Have the children use their own words to describe the life cycle of a pepper plant. Then have them draw the life cycle in their science notebook and label each step.

Point out the words grow and grows in the book. Tell the children that the word grow has many other forms such as growing, grew, and growth. Call on a few students to use each form in a sentence.

Closure:

Call on two volunteers to hand out the green and white construction paper leaves.

Ask the students to illustrate the lifecycle of another plant such as a tomato or a squash. Supply children with pictures or actual fruits to help them draw accurate illustrations of their plants leaves fruit and seeds. The children may wish to refer to the illustrations of the pepper lifecycle to help them with the order of the lifecycle steps. After the students have completed their drawings, have them write a short sentence to describe each step in their life in their plant’s lifecycle on a separate piece of lined paper. Invite the students to share their illustrations with the class.

Explore it: How does a seed grow?

In this lesson, the children learn about the stages of a plant life cycle. While the students are completing their life cycle projects, ask for two students at a time to meet the teacher at the back table in the classroom to prepare their experiment.

While two students prepare their experiment and work on their projects, show a video on the life cycle of a plant on the smartboard.

After each student has prepared their experiment, they will place their plastic bag on the windowsill, and take a seat back at their desk.

When all of the students have completed their experiment preparation, and their life cycle projects, explain to the students:

“When a bean seed first germinates, or begins to grow, the two halves of the seed called cotyledons are attached to the stem. These seed leaves provide food for the plant until it grows its first two true leaves.”

Show the students a picture of the cotyledons of the seed.

Throughout the following weeks, the students will use observations and evidence to communicate how plants grow. The students will observe and describe changes to a Pinto bean seed as it sprouts into a seedling.

Ask the students to point to the page number 68 in their Interactive Science Workbooks.

Ask the students to make a prediction of what they think will happen to their seeds. Call on a few students to share their predictions, then ask the students to write their predictions down in the provided section on page 68.

Extension:

Have the children recall that in the Explorer activity they observed a bean seed sprout and that it began to grow into a bean seedling. Have the children compare that to the way a pepper seed grows into a pepper seedling.

Display the pages on the lifecycle of a plant on the whiteboard. Have a volunteer come to the board and point to the start of the pepper plant life cycle. Have the children described the first step in the lifecycle. Have another volunteer identify and describe the second step and so on until the cycle is complete. To emphasize the idea of a cycle being continuous, repeat the steps a second time.

Resources:

Pearson Interactive Science Grade 1 Teacher Edition

Pearson Interactive Science Grade 1 Student Textbook and Workbook