Lesson 2.1
Growing Seeds
Lesson Overview

In this opening lesson of Chapter 2, students begin their investigation of plants, and lay the groundwork for the rest of the chapter, by unearthing what plants need and how they get what they need. Students get a message from the children in Mariposa Grove explaining that one of the children’s neighbors has milkweed plants that have grown different amounts. This introduces the Chapter 2 Question: *Why did two milkweed seeds become plants, but the other did not?* Students begin their new investigation of plants by planting radish seeds and by watching a time-lapse video of a radish seed growing into a full-grown plant. The teacher reads a new section of *Handbook of Plants* to introduce students to the names of various plant parts, which supports students’ developing explanations of what plants look like when they grow. The lesson concludes with a movement routine that allows students to pretend they are plants, reinforcing the names of different plant parts. The purpose of this lesson is to introduce students to the different parts of a plant and help them begin to visualize how seeds grow into plants.

**Anchor Phenomenon:** There are no monarch caterpillars in the Mariposa Grove community garden since a vegetable garden was planted.

**Investigative Phenomenon:** Seeds grow different amounts.

**Students learn:**

- Plants grow from seeds.
- Plants have stems, leaves, flowers, and roots.
- Scientists sometimes read things multiple times for different purposes.
Reading About Plant Growth

The teacher reads a new section of *Handbook of Plants*. Students are introduced to the Plant Growth movement routine.

**Instructional Guide**

1. **Set the purpose for reading.** Display the front cover of *Handbook of Plants*. Remind students they are trying to figure out what it looks like when a plant grows.

   Scientists sometimes read something more than one time to help them answer their questions. Today, we are going to read *Handbook of Plants* again, but this time we are going to read for a different purpose. Who can remind us what it means to set a purpose when reading? [Decide what you want to figure out by reading.]

   Our purpose for reading today is to figure out what the different parts of a plant are called. That will help us explain what it looks like when plants grow to other scientists and to the children in Mariposa Grove.

2. **Introduce the Contents page.** Turn to page 3.

   A few days ago, we used the index of our reference book to find out what caterpillars eat. The index helps us find specific words or ideas. Another important part of books that give us information is called a table of contents.

   This is the Contents. The Contents page tells readers the important sections of the book. It also tells them what pages contain the information they are looking for so that they can find it.

   Read several of the headings listed on the Contents page and point out that all of the headings mention something about plants.

   I remember our purpose for reading is to figure out what different parts of a plant are called. That will help us explain what it looks like when a plant grows.

   I notice that the first part is called “How Plants Grow” and it begins on page 4. That seems like a good place to look.
3. Read and discuss the first page of the “How Plants Grow” section. Read page 4 aloud. Then, point to the plant illustrations at the bottom of the page and reread the last sentence.

These plants have grown different amounts. Talk about this question with your partner: Which plant do you think has grown the most? Why?
[The one on the right. It is the tallest/biggest. It has the most leaves.]

Which plant has grown the least? Why do you think that?
[The one on the left. It is the smallest. It has the fewest leaves.]

4. Read page 5, paying particular attention to the diagram. Point out the labels of the different parts of the plant to students, asking students to repeat the names of each plant part. Explain that when there is more than one leaf, they are called leaves.

Our purpose for reading this section was to figure out what the different parts of plants are called so that we can explain what it looks like when plants grow. Did we meet our purpose?
[Yes, we figured out that seeds grow into plants with roots, a stem, leaves, and flowers.]

5. Introduce the word grow. Hold up the vocabulary card for grow.

This is the word grow. To grow means to get bigger or get new parts.

We are going to practice saying the word. Say the word after me: grow.

Now say the word together: grow.

Now whisper the word grow to your partner.

To grow means to get bigger or get new parts.

Post the vocabulary card to the Vocabulary section of the classroom wall.

6. Introduce the Plant Growth movement routine. Remind students that in the video a radish seed grew into full-grown plant. Let students know that they are going to learn a movement routine to help them remember the names of the different parts of plants and to show how a plant changes as it grows. Position the Handbook of Plants big book so that it is open to the plant diagram on page 5 and all students can see it.

7. Model the Plant Growth movement routine while referring to the diagram. Demonstrate each step of the routine and invite students to repeat the words and movements after you. Point to the different plant parts on the diagram as you pantomime them.

- Hug your knees to your chest on the floor and say the word seed.
- Push out your feet along the floor to show roots spreading out in the ground and say the word roots.
Repeat the routine several times. You may want students to take turns leading the routine. Continue to point to the parts of the diagram as students work through the routine.

8. Conclude the lesson.

One thing scientists think about is how things have different parts and how those parts work together. We just used our bodies to show some of the different parts of a plant as it grows.

The different parts of a plant, such as the roots, leaves, and stem, all work together to become a full-grown plant. They all have an important job in helping the plant grow!

In the next lesson, we will continue to investigate what it looks like when seeds grow into plants.

Teacher Support

Instructional Suggestion

Crosscutting Concept: Calling out Systems and System Models to Kindergartners
The last step of Activity 2 is another example of what it looks like to call out Systems and System Models to kindergartners. The goal is for them to start to see and build mental models of the connections between different parts of a system. Find other opportunities like this across this unit (and others) to point out how different parts work together. The diagram of a plant in the reference book is a model of a plant system. Don’t worry about using the words system or model—focus on helping students see how the parts of a whole interact, and on how the diagram can help them see the relationships.

Background

Science Note: Not All Plants Grow Flowers
The image of the plant in the “How Plants Grow” section of Handbook of Plants includes a plant with a flower, which students are sure to notice. While many plants grow flowers, it is unlikely students will see the plants in the Plant Investigations grow flowers. When students point out the flowers, acknowledge their observation, but focus their conversation on roots, stem, and leaves, the parts of plants that students will consider more deeply throughout the unit.

Rationale

Pedagogical Goals: Plant Growth Movement Routine
Kindergarten students are busy developing their cognitive stamina, gross and fine motor skills, and academic skills. We try to limit activities where students are sitting to 15 minutes or fewer in order to give students opportunities to move their bodies and get refocused. One way to give students this type of break is through the use of the Plant Growth movement routine. This allows students to get a physical break while still engaging with unit content. It also gives them a different way to practice new scientific vocabulary.
Instructional Suggestion

Literacy Note: Using a Reference Book
Students have been introduced to the idea that reference books are not intended to be read cover to cover. Rather, people search for the information they need and then read the relevant sections carefully. Last time they used the reference book, you explained and modeled the use of an index. In this lesson, you will explain and model the use of the Contents page. Reading reference materials in this way is authentic to how scientists and engineers use reference materials, and it encourages students to read complex texts both purposefully and carefully.
Reading About Plant Growth

The teacher reads a new section of Handbook of Plants. Students are introduced to the Plant Growth movement routine.

Instructional Guide

1. Set the purpose for reading. Display the front cover of Handbook of Plants. Remind students they are trying to figure out what it looks like when a plant grows.

Los científicos a veces leen algo más de una vez para ayudarles a responder sus preguntas. Hoy vamos a leer el Manual de plantas de nuevo, pero esta vez vamos a leer con un propósito diferente. ¿Quién puede recordarnos lo que significa definir un propósito al leer? [Decidir lo que quieres averiguar al leer].

Nuestro propósito para leer hoy es averiguar cómo se llaman las diferentes partes de una planta. Eso nos ayudará a explicar cómo se ve cuando las plantas crecen a otros científicos y a los niños en Mariposa Grove.

2. Introduce the Contents page. Turn to page 3.

Hace unos cuantos días, usamos el índice de nuestro libro de referencia para averiguar qué comen las orugas. El índice nos ayuda a encontrar palabras o ideas específicas. Otra parte importante de los libros que nos da información se llama Contenido.

Este es el Contenido. La página del Contenido les dice a los lectores las secciones importantes del libro. También les dice qué páginas contienen la información que están buscando, para que puedan encontrarla.

Read several of the headings listed on the Contents page and point out that all of the headings mention something about plants.

Recuerdo que nuestro propósito para leer es averiguar cómo se llaman las diferentes partes de una planta. Eso nos ayudará a explicar cómo se ve cuando una planta crece.

Notó que la primera parte se llama “Cómo crecen las plantas” y empieza en la página 4. Ese parece ser un buen lugar para mirar.
3. Read and discuss the first page of the “How Plants Grow” section. Read page 4 aloud. Then, point to the plant illustrations at the bottom of the page and reread the last sentence.

Estas plantas han crecido diferentes cantidades. Hablen acerca de esta pregunta en parejas: ¿Qué planta piensan que ha crecido más? ¿Por qué?
[La de la derecha. Es la más alta/la más grande. Es la que tiene más hojas].

¿Qué planta ha crecido menos? ¿Por qué piensan eso?
[La de la izquierda. Es la más pequeña. Es la que tiene menos hojas].

4. Read page 5, paying particular attention to the diagram. Point out the labels of the different parts of the plant to students, asking students to repeat the names of each plant part. Explain that when there is more than one leaf, they are called leaves.

Nuestro propósito para leer esta sección era averiguar cómo se llaman las diferentes partes de una planta, para que podamos explicar cómo se ve cuando las plantas crecen. ¿Cumplimos nuestro propósito?
[Sí, averiguamos que las semillas crecen y se convierten en plantas con raíces, un tallo, hojas y flores].

5. Introduce the word grow. Hold up the vocabulary card for grow.

Esta es la palabra crecer. Crecer significa hacerse más grande o hacer partes nuevas.

Vamos a practicar decir la palabra. Digan la palabra después de mí: crecer.

Ahora digan la palabra juntos: crecer.

Ahora susurren la palabra crecer a su compañero o compañera.

Crecer significa hacerse más grande o hacer partes nuevas.

Post the vocabulary card to the Vocabulary section of the classroom wall.

6. Introduce the Plant Growth movement routine. Remind students that in the video a radish seed grew into full-grown plant. Let students know that they are going to learn a movement routine to help them remember the names of the different parts of plants and to show how a plant changes as it grows. Position the Handbook of Plants big book so that it is open to the plant diagram on page 5 and all students can see it.

7. Model the Plant Growth movement routine while referring to the diagram. Demonstrate each step of the routine and invite students to repeat the words and movements after you. Point to the different plant parts on the diagram as you pantomime them.

- Hug your knees to your chest on the floor and say the word seed.
- Push out your feet along the floor to show roots spreading out in the ground and say the word roots.
• Begin to stand up and say the word stem.
• While almost standing, reach your arms out to the side and say the word leaves.

Repeat the routine several times. You may want students to take turns leading the routine. Continue to point to the parts of the diagram as students work through the routine.

8. Conclude the lesson.

Una cosa en la que los científicos piensan es cómo las cosas tienen diferentes partes y cómo trabajan juntas esas partes. Acabamos de usar nuestros cuerpos para mostrar algunas de las diferentes partes de una planta mientras crece.

Las diferentes partes de una planta, como las raíces, hojas y tallo, trabajan juntas para convertirse en una planta completamente crecida. ¡Todas tienen un trabajo importante en ayudar a la planta a crecer!

En la próxima lección, continuaremos investigando cómo se ve cuando las semillas crecen y se convierten en plantas.

Teacher Support

Instructional Suggestion

Crosscutting Concept: Calling out Systems and System Models to Kindergartners
The last step of Activity 2 is another example of what it looks like to call out Systems and System Models to kindergartners. The goal is for them to start to see and build mental models of the connections between different parts of a system. Find other opportunities like this across this unit (and others) to point out how different parts work together. The diagram of a plant in the reference book is a model of a plant system. Don’t worry about using the words system or model—focus on helping students see how the parts of a whole interact, and on how the diagram can help them see the relationships.

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