Lesson 2.5
Observing Garlic Roots
Lesson Overview

Building on students’ knowledge that plants need water to live and grow, the focus of the next three lessons shifts to investigating how plants get the water they need. First, students share their initial ideas of how plants obtain water. Then, they record their observations of garlic with and without water in their Investigation Notebooks. Students participate in a Shared Reading of the book *A Plant in the Desert* with the purpose of figuring out how one type of plant in the desert gets the water it needs to live and grow. The purpose of this lesson is to introduce a plant part that plays an important role in a plant system—the roots that take in the water the plant needs from the surrounding soil. This lesson prepares students to understand that one of the functions of a plant’s roots is to help get the water that a plant needs.

Anchor Phenomenon: There are no monarch caterpillars in the Mariposa Grove community garden since a vegetable garden was planted.
Investigative Phenomenon: Plants live where they can get water.

Students learn:

- Plants get the water they need using their roots.
The teacher leads a second Shared Reading of *A Plant in the Desert* and formally introduces *roots* with the vocabulary routine.

**Instructional Guide**

1. **Revisit the Investigation Question.** Point to the Investigation Question on the board.
   - Today we observed our garlic to help answer our new question *How do plants get the water they need?*
   - We observed that the garlic in the cup with water is growing but the garlic in the cup with no water is not growing. Why is the garlic in the cup with water growing? [The water it needs is there.]

2. **Remind students of setting a purpose when reading.** Display the front cover of the *A Plant in the Desert* big book. Ask students to share what they remember about the book.
   - Remember that one important way that readers learn from a book is to set a purpose before reading. What do readers do when they set a purpose for reading? [They decide what they want to figure out.]
   - The first time we read this book, our purpose was to figure out if plants in dry places need water. What did we figure out about plants in dry places? [They need water to grow.]

3. **Set a new purpose for reading.**
   - Today we will read this book again with a different purpose. We want to figure out how sage plants in the desert get water. We are trying to answer the question *How do plants get the water they need?*

4. **Begin reading and pause after page 5.**
   - How do you think the sage plant gets the water it needs to live and grow in the desert?

What did the book say about how the sage plant gets water?
[It gets water from the rain. The rain goes into the ground. The sage plant uses its roots to get water.]

6. Continue reading through page 15.

I noticed that when it is raining the sage plant gets a lot of water. How does the sage plant get water when it is not raining?
[It uses its roots to get water from deep in the ground.]

7. Introduce the word roots. Hold up the vocabulary card for roots.

This is the word roots. The roots are the underground plant parts that take in water.

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

Now say the word together: roots.

Now whisper the word roots to your partner.

The roots are the underground plant parts that take in water.

Post the vocabulary card to the Vocabulary section of the classroom wall. Next to the vocabulary card, post the index card on which you drew the roots.

8. Return to the purpose of the Shared Reading.

Our purpose for reading today was to figure out how sage plants in the desert get water. What did we figure out?
[They get water through their roots. The roots get water from the ground.]

We now know that sage plants get water through their roots, but we do not know if that is true for all plants. In our next science lesson, we will continue to explore how all plants get the water they need to live and grow.

9. Revisit the What Scientists Do chart. Remind students that scientists do a lot of different things to help them answer their questions.

We did a lot of work today as scientists while trying to answer our question How do plants get the water they need?

Point to record.

Scientists sometimes record their observations to help them remember. Today, we recorded our observations of garlic in cups with water and in cups with no water.
Scientists also communicate, or share, for many reasons. Today, we shared our ideas with a partner about how garlic gets the water it needs to live and grow.

Point to read.

Scientists also sometimes read to figure out the answer to their questions. What did we figure out from reading *A Plant in the Desert* today?

[Sage plants get water with their roots.]

10. Conclude the lesson. Reinforce that students are doing great work as scientists. Let students know that they will continue to investigate how plants get the water they need in the next lesson.

Teacher Support

Background

Science Note: About Roots

Roots primarily grow underground and are responsible for absorbing nutrients and moisture from the soil. They also anchor the plant in the ground, provide extra support for the plant’s stem, and, in some cases, store food. At the tip of the root are two important features—the meristem, which is where new cells grow, and the root cap. The root cap protects the meristem and directs which way the root will grow.

Instructional Suggestion

Providing More Experience: Home Investigation

This optional activity invites students to plant a garlic clove in a place where they think it will grow. Home Investigations can encourage interaction and discussion between students and their families around science concepts, which has been found to be beneficial for student learning. See Optional: Chapter 2 Home Investigation: Growing Garlic copymaster (in Digital Resources). Make one copy for each student and review the instructions with students.

Background

Literacy Note: Rereading for a New Purpose

There are many benefits to reading informational texts multiple times for different purposes. Not only are young students likely to enjoy returning to a familiar text, but it also demonstrates that informational texts can serve the genuine purpose of answering questions we have about the world. By rereading the text with students to answer a new question, you are modeling the strategy of reading informational text for a particular purpose, which promotes focused, thoughtful, engaged reading.
The teacher leads a second Shared Reading of *A Plant in the Desert* and formally introduces roots with the vocabulary routine.

**Instructional Guide**

1. **Revisit the Investigation Question.** Point to the Investigation Question on the board.

   - Hoy observamos nuestro ajo para ayudar a responder nuestra nueva pregunta ¿Cómo obtienen las plantas el agua que necesitan?

   - Observamos que el ajo en el vaso con agua está creciendo, pero el ajo en el vaso sin agua no está creciendo. ¿Por qué está creciendo el ajo en el vaso con agua? [El agua que necesita está allí].

2. **Remind students of setting a purpose when reading.** Display the front cover of the *A Plant in the Desert* big book. Ask students to share what they remember about the book.

   - Recuerden que una manera importante en la que los lectores aprenden de un libro es definir un propósito antes de leer. ¿Qué hacen los lectores cuando definen un propósito para leer? [Deciden lo que quieren averiguar].

   - La primera vez que leímos este libro, nuestro propósito era averiguar si las plantas en lugares secos necesitan agua. ¿Qué averiguamos acerca de las plantas en lugares secos? [Necesitan agua para crecer].

3. **Set a new purpose for reading.**

   - Hoy leeremos este libro de nuevo con un propósito diferente. Queremos averiguar cómo obtienen agua las plantas de salvia en el desierto. Estamos intentando responder la pregunta ¿Cómo obtienen las plantas el agua que necesitan?

4. **Begin reading and pause after page 5.**
¿Cómo piensan que la planta de salvia obtiene el agua que necesita para vivir y crecer en el desierto?


¿Qué decía el libro acerca de cómo obtiene agua la planta de salvia?
[Obtiene agua de la lluvia. La lluvia entra en la tierra. La planta de salvia usa sus raíces para obtener el agua].

6. Continue reading through page 15.

Noté que cuando está lloviendo la planta de salvia obtiene mucha agua. ¿Cómo obtiene agua la planta de salvia cuando no está lloviendo?
[Usa sus raíces para obtener agua de lo profundo en la tierra].

7. Introduce the word roots. Hold up the vocabulary card for roots.

Esta es la palabra raíces. Las raíces son las partes bajo tierra de una planta que absorben agua.

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

Ahora digan la palabra juntos: raíces.

Ahora susurren la palabra raíces a su compañero o compañera.

Las raíces son las partes bajo tierra de una planta que absorben agua.

Post the vocabulary card to the Vocabulary section of the classroom wall. Next to the vocabulary card, post the index card on which you drew the roots.

8. Return to the purpose of the Shared Reading.

Nuestro propósito para leer hoy era averiguar cómo obtienen agua las plantas de salvia en el desierto. ¿Qué averiguamos?
[Obtienen agua a través de sus raíces. Las raíces obtienen agua de la tierra].

Ahora sabemos que las plantas de salvia obtienen agua a través de sus raíces, pero no sabemos si eso es válido para todas las plantas. En nuestra próxima lección de ciencias, continuaremos explorando cómo todas las plantas obtienen el agua que necesitan para vivir y crecer.

9. Revisit the What Scientists Do chart. Remind students that scientists do a lot of different things to help them answer their questions.

Hicimos mucho trabajo hoy como científicos y científicas mientras intentábamos responder nuestra pregunta ¿Cómo obtienen las plantas el agua que necesitan?
Point to record.

Los científicos a veces apuntan sus observaciones para ayudarles a recordar. Hoy apuntamos nuestras observaciones del ajo en vasos con agua y en vasos sin agua.

Point to communicate.

Los científicos también comunican, o comparten, por muchas razones. Hoy compartimos nuestras ideas acerca de cómo el ajo obtiene el agua que necesita para vivir y crecer.

Señala leen.

Los científicos a veces también leen para averiguar la respuesta a sus preguntas. ¿Qué averiguamos tras leer Una planta en el desierto hoy? [Las plantas de salvia obtienen agua con sus raíces].

10. Conclude the lesson. Reinforce that students are doing great work as scientists. Let students know that they will continue to investigate how plants get the water they need in the next lesson.

Teacher Support

Background

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