Lesson 2.2
A Plant Is a System
Lesson Overview

Students read to gather more information about how a plant is a system with different parts that help it grow. Students are introduced to the book, *A Plant Is a System*, about plant structures and their functions. Partners read with the purpose of finding out how the plant's parts work together as part of a system to help the plant grow. Students use their Investigation Notebooks to record what they learn about the function of different parts of a plant. Students revisit the Concept Mapping Routine to explore relationships among focal vocabulary and use arrows and writing to illustrate the relationships they define. Students engage in the Plant Growth Body Model, a kinesthetic model about the role that leaves and roots play in the process of plant growth. The purpose of this lesson is for students to understand that a plant is a system that uses its leaves and roots to get the sunlight and water it needs to grow.

**Anchor phenomenon:** No new chalta trees are growing in the Bengal Tiger Reserve in India.

**Investigative phenomenon:** Plants get water and sunlight.

**Students learn:**

- Plants have leaves that get sunlight. Plants have roots that get water from the soil.
- A plant is a system with parts that help it get the things it needs to grow.
- Every part in a plant has a particular job.
Setting a Purpose for Reading

The teacher introduces *A Plant Is a System* and sets a purpose for reading—to find out how a plant uses its parts to get what it needs to grow.

Instructional Guide

1. Connect to prior learning.

In our last lesson, you observed the roots and leaves of several different plants, and thought about how plants use these parts to help the plant get what it needs to grow.

Invite students to share their ideas about how a plant’s roots and leaves help the plant get what it needs to grow. Accept all responses.

2. Revisit the Investigation Question.

Today we will continue to work as plant scientists to help answer this question: *How do plants get the water and sunlight that they need to grow?*

3. Hold up a copy of *A Plant Is a System*. Read the title aloud. Invite students to share their observations of the front cover.

This book is about how a plant has different parts that work together to do different things. Today you will read this book with a partner.

4. Set a purpose for reading.

An important way that readers learn from a book is to set a purpose before reading. When you set a purpose, you decide what you want to learn from the book before you read. That way, you can be thinking about what you want to learn as you read.

Refer students to the Investigation Question on the board.
We have been trying to answer the question, *How do plants get the water and sunlight that they need to grow?* And we have been investigating plant parts to help us answer this question.

So, our purpose for reading today will be to find out how a plant uses its parts to get the water and sunlight it needs to grow.

Write “Find out how a plant uses its parts to get the water and sunlight it needs to grow” in the Reading column of the Setting a Purpose chart.

**Teacher Support**

**Instructional Suggestion**

**Providing More Experience: Today’s Daily Written Reflection**

*What do you think a plant uses its roots for? Why do you think that?* This prompt (on page 27 in the Investigation Notebook) asks students to think about what they already know about the function of roots in a plant. The purpose of this prompt is to build upon what students have already learned about how roots support a plant to grow and to explain their thinking.

**Background**

**About the Book: A Plant Is a System**

*A Plant Is a System* presents the concept of a system as a group of parts that work together. Plants function as a particular type of system whose parts work together to help them get what they need to live and grow. Each part of the system plays a role in helping the plant get what it needs. A plant’s leaves catch light from the sun. A plant’s roots take in water. A plant’s stem connects its roots and leaves. A plant’s flowers make seeds that grow into new plants. The parts of the system depend on one another to support the plant’s growth. This book delivers content about plants and exposes students to the essential science concept of systems. Through reading *A Plant Is a System*, students come to understand a system as a group of networked parts and are then prepared to apply this understanding to other systems in the natural world.
Partner Reading

Students read *A Plant Is a System* with partners and record what they learn about the function of different parts of a plant.

### Instructional Guide

1. **Assign pairs and distribute books.** Distribute one copy of *A Plant Is a System* to each pair of students, and distribute Investigation Notebooks. Revisit the Partner Reading Guidelines as needed.

2. **Read pages 3–5 aloud to students.** Instruct students to turn to page 3 and have them follow along as you read.

3. **Introduce system.** Display the *system* vocabulary card.

   - We just learned that a plant is a system. A system is a group of parts that work together.

   Post the *system* vocabulary card.

4. **Return to the purpose for reading.** Refer students to the Setting a Purpose chart.

   - Our purpose for reading is to find out how a plant uses its parts to get the water and sunlight it needs to grow.

   - Have we met our purpose? What have we found out so far about how a plant uses its parts to get the water and sunlight it needs to grow?

   Call on several students to share their ideas.

   - So far, we’ve read that plants have parts, that plants need water and sunlight to grow, and that plants’ parts help them get water and sunlight. But we have not read how a plant’s parts help it get what it needs. You will need to read more to find that out.

5. **Project notebook page 29.** Have students turn to page 29, What Do the Parts of a Plant Do?, in their notebooks as you project the page.
Today we will use our notebooks to record what we find out how a plant uses its parts to get the sunlight and water it needs to grow when we read *A Plant Is a System*. This will help us focus on our purpose for reading.

Read the directions on this page aloud. Point out the sentence starters where students will record what they learn.

6. Students read and complete the notebook page.

7. On-the-Fly Assessment: Students practice reading with a purpose. Circulate to support students’ partner reading and listen for how they are able to use the strategy of setting a purpose to focus their reading on the functions of different plant structures.

8. Return to the projection of notebook page 29 and invite partners to share. Call on volunteers to share what each plant part does. Encourage students to refer to their Investigation Notebooks and *A Plant Is a System* to support sharing what they have learned. Record students’ ideas on the projection of the notebook page.

How is a plant a system?

[It has different parts that work together and do different things for the plant.]

9. Return to key vocabulary from the book. When students have finished reading, explain that you want to look back at two important science words from the book.

10. Discuss roots.

   - **Put the word in context.** Ask students to turn to page 8. Read the page aloud.
   
   - **Prompt students to think about the meaning of the word.** Ask questions to help students think more deeply about the word, such as the following:
     
     - When you see a plant outside, do you see its roots? Why or why not?
     - How do roots help a plant?
     - Where do roots get water from?
     - What shape do roots have?

   - **Find the word in the text.** Have students turn to page 9 and, with their partners, find and read the sentences that include the word roots.
   
   - **Discuss other examples.** Have students describe different roots they observed in the previous lesson.
   
   - **Give the science meaning of the word.** Explain that roots are the underground plant parts that take in water to help the plant grow.

11. Post the roots vocabulary card on the classroom wall.

12. Discuss leaves.
• **Put the word in context.** Ask students to turn to page 6. Read the first three sentences aloud: “Plants need sunlight to live and grow. A plant is a system with parts for getting the sunlight it needs. Those parts are called leaves.”

• **Think about the meaning of the word.** Ask questions to help students think more deeply about the word, such as the following:
  - When you see a plant outside, do you see its leaves? Why or why not?
  - How do leaves help a plant?
  - What shape do leaves have?
  - Is the shape of a leaf important?

• **Find the word in the text.** Have students turn to page 7 and find and read the sentences that include the word *leaves*.

• **Discuss other examples.** Have students describe different leaves they observed in the previous lesson or that they have seen outside of class.

• **Give the science meaning of the word.** Explain that leaves are the flat, green plant parts that use light to help the plant grow.

13. Post the *leaves* vocabulary card on the classroom wall.

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**Embedded Formative Assessment**

**On-the-Fly Assessment 6: Reading with a Purpose**

**Look for:** This activity provides an opportunity for students to practice reading with a purpose. Circulate and listen for whether students keep the purpose for reading in mind as they read. Do students pause when they get to information related to the purpose for reading so that they can record ideas in their notebooks? Also pay attention to how students are making sense of how each plant structure plays a particular role within the plant system. Do students understand that each part plays a particular role? Do students understand that the parts work together to help the plant grow and live? Students will have additional opportunities to reflect on the crosscutting concept of Structure and Function in future lessons.

**Now what?** If students do not seem to be keeping the purpose for reading in mind as they complete the activity, you may want to provide additional modeling by using another example from *A Plant Is a System*. Read page 6 with students. Think aloud as you remind yourself what the purpose for reading is (to find out how a plant uses its parts to get the water and sunlight it needs to grow) and discuss how you just read that leaves catch sunlight so the plant can make food. Point out that you now know how leaves help plants, so part of your purpose for reading has been met. Depending on how many students need this support, you could either coach a few students individually during the Partner Reading activity, or you could work with a small group or the whole class.
Teacher Support

Background

Literacy Note: Setting a Purpose for Reading
Good readers evaluate the text as they read to determine whether it is meeting the goals they set. In this lesson, you set the purpose for students: to find out how a plant uses its parts to get the water and sunlight it needs to grow. You read the first three pages aloud, and then guide students to reflect on whether or not the purpose has been met. This reflection supports students in developing the habit of keeping their purpose in mind, as they read.

Rationale

Literacy Note: Approach to Reading
This is the second opportunity students have to employ the sense-making strategy of setting a purpose in reading. In this lesson, you set the purpose yourself, thus providing students a high level of support for setting a purpose. However, after reading several pages, you invite students to reflect on whether or not the purpose has been met. This helps prepare students to employ the strategy more independently later in the unit.

Instructional Suggestion

Literacy Note: Text Features
Depending on the needs of your class, you may want to draw students’ attention to particular text features and how students can use those features to help them understand the text. If your students would benefit from discussing diagrams with “close-up” insets, you can have students turn to page 9 and point out where the root hairs and threads are shown close up. Discuss why the author may have chosen to show these objects in this way. If your students would benefit from discussing the importance of labels in a diagram, you can turn to pages 10 and 11 and discuss the what the labels help you understand.

Instructional Suggestion

Going Further: Returning to Drawings from Lesson 2.1
To extend this activity, have students think about the plants and the drawings that students made during the Think-Draw-Pair-Share in the previous lesson. Students can discuss with one another how they might adjust their drawings now that they have read A Plant Is a System. Give students time to add additional detail to their drawings based on the information they gathered from the text. Then, have students share what they added with a neighbor and discuss why they added those pieces.

Possible Responses

Investigation Notebook
What Do the Parts of a Plant Do? (page 29)
The roots of the plant get water.
The leaves of the plant get sunlight.
What Do the Parts of a Plant Do?

Directions:
1. Read A Plant Is a System.
2. As you read, think about the purpose for reading: Find out how a plant uses its parts to get the water and sunlight it needs to grow.
3. On the lines below, write what each part of the plant does.

The roots of the plant ____________________________________________.

The leaves of the plant __________________________________________.
The teacher introduces *A Plant Is a System* and sets a purpose for reading—to find out how a plant uses its parts to get what it needs to grow.

### Instructional Guide

1. **Connect to prior learning.**

   In our previous lesson, we observed the roots and leaves of different plants and thought about how plants use these parts to get what they need to grow.

   Invite students to share their ideas about how a plant’s roots and leaves help the plant get what it needs to grow. Accept all responses.

2. **Revisit the Investigation Question.**

   Today we will continue working as plant scientists to help answer this question: *¿Cómo obtienen las plantas el agua y la luz del sol que necesitan para crecer?*

3. **Hold up a copy of *A Plant Is a System***. Read the title aloud. Invite students to share their observations of the front cover.

   Este libro trata de cómo una planta tiene diferentes partes que trabajan juntas para hacer diferentes cosas. Hoy leerán este libro en parejas.

4. **Set a purpose for reading.**

   Una manera importante en la que los lectores aprenden de un libro es definir un propósito antes de leer. Cuando definen un propósito, deciden lo que quieren aprender del libro antes de leer. De esa manera, pueden estar pensando en lo que quieren aprender mientras leen.

   Refer students to the Investigation Question on the board.
Hemos estado intentando responder la pregunta, ¿Cómo obtienen las plantas el agua y la luz del sol que necesitan para crecer? Y hemos estado investigando las partes de las plantas para ayudarnos a responder esta pregunta.

Entonces, nuestro propósito para leer hoy será descubrir cómo una planta usa sus partes para obtener el agua y la luz del sol que necesita para crecer.

Write “Find out how a plant uses its parts to get the water and sunlight it needs to grow” in the Reading column of the Setting a Purpose chart.

Teacher Support

Instructional Suggestion

Providing More Experience: Today’s Daily Written Reflection
What do you think a plant uses its roots for? Why do you think that? This prompt (on page 27 in the Investigation Notebook) asks students to think about what they already know about the function of roots in a plant. The purpose of this prompt is to build upon what students have already learned about how roots support a plant to grow and to explain their thinking.

Background

About the Book: A Plant Is a System
A Plant Is a System presents the concept of a system as a group of parts that work together. Plants function as a particular type of system whose parts work together to help them get what they need to live and grow. Each part of the system plays a role in helping the plant get what it needs. A plant’s leaves catch light from the sun. A plant’s roots take in water. A plant’s stem connects its roots and leaves. A plant’s flowers make seeds that grow into new plants. The parts of the system depend on one another to support the plant’s growth. This book delivers content about plants and exposes students to the essential science concept of systems. Through reading A Plant Is a System, students come to understand a system as a group of networked parts and are then prepared to apply this understanding to other systems in the natural world.
Partner Reading

Students read *A Plant Is a System* with partners and record what they learn about the function of different parts of a plant.

### Instructional Guide

1. **Assign pairs and distribute books.** Distribute one copy of *A Plant Is a System* to each pair of students, and distribute Investigation Notebooks. Revisit the Partner Reading Guidelines as needed.

2. **Read pages 3–5 aloud to students.** Instruct students to turn to page 3 and have them follow along as you read.

3. **Introduce system.** Display the *system* vocabulary card.

   Acabamos de aprender que una planta es un sistema. Un sistema es un grupo de partes que trabajan juntas.

   Post the *system* vocabulary card.

4. **Return to the purpose for reading.** Refer students to the Setting a Purpose chart.

   Nuestro propósito para leer es descubrir cómo una planta usa sus partes para obtener el agua y la luz del sol que necesita para crecer.

   ¿Hemos cumplido nuestro propósito? ¿Qué hemos descubierto hasta ahora acerca de cómo una planta usa sus partes para obtener el agua y la luz del sol que necesita para crecer?

   Call on several students to share their ideas.

   Hasta ahora, hemos leído que las plantas tienen partes, que las plantas necesitan agua y luz del sol para crecer y que las partes de las plantas las ayudan a obtener agua y luz del sol. Pero no hemos leído cómo las partes de una planta la ayudan a obtener lo que necesita. Necesitarán leer más para averiguar eso.

5. **Project notebook page 29.** Have students turn to page 29, *What Do the Parts of a Plant Do?*, in their notebooks as you project the page.
Read the directions on this page aloud. Point out the sentence starters where students will record what they learn.

6. Students read and complete the notebook page.

7. On-the-Fly Assessment: Students practice reading with a purpose. Circulate to support students’ partner reading and listen for how they are able to use the strategy of setting a purpose to focus their reading on the functions of different plant structures.

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10. Discuss roots.

   • Put the word in context. Ask students to turn to page 8. Read the page aloud.

   • Prompt students to think about the meaning of the word. Ask questions to help students think more deeply about the word, such as the following:
     • When you see a plant outside, do you see its roots? Why or why not?
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   • Find the word in the text. Have students turn to page 9 and, with their partners, find and read the sentences that include the word roots.

   • Discuss other examples. Have students describe different roots they observed in the previous lesson.

   • Give the science meaning of the word. Explain that roots are the underground plant parts that take in water to help the plant grow.

11. Post the roots vocabulary card on the classroom wall.

12. Discuss leaves.
• Put the word in context. Ask students to turn to page 6. Read the first three sentences aloud: “Plants need sunlight to live and grow. A plant is a system with parts for getting the sunlight it needs. Those parts are called leaves.”

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  • When you see a plant outside, do you see its leaves? Why or why not?
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Possible Responses

Investigation Notebook
What Do the Parts of a Plant Do? (page 29)
The roots of the plant get water.
The leaves of the plant get sunlight.
¿Qué hacen las partes de una planta?

Instrucciones:
1. Lee Una planta es un sistema.
2. Mientras lees, piensa en el propósito de leer: Descubrir cómo una planta usa sus partes para obtener el agua y la luz del sol que necesita para crecer.
3. En las líneas debajo, escribe lo que hace cada parte de la planta.

Las raíces de la planta ____________________________________________________________________.

Las hojas de la planta ____________________________________________________________________.