

Unit 4: The Power of Pollinators

WEEK 4 Lesson 1

Science and Engineering: Life Sciences

Ecosystems: Learning about Leaves

Big Idea	The parts of an organism have specific functions.
Guiding Question	Why are the particular parts of an organism important?
Content Objectives	I can conclude that leaves use light, water, air, and nutrients to make the food that plants need to grow and develop. (Science 2-LS2-3(MA)) I can write and draw my observations of how my plant has changed. (W.3, 2-LS2-3, Practice 4)
Language Objective	I can ask questions and talk about the role of leaves in plant growth and development. (SL.1.2, SL.2.2.b)
Vocabulary	leaf: part of the plant that is flat, green, and grows from the stem, and which is involved in making the plant's food stem: the part of the plant that grows leaves, supports the plant, and transports food; also called a stalk or trunk photosynthesis: the process a plant uses to make food by converting sunlight to energy
Materials and Preparation	<ul style="list-style-type: none">● Science and Engineering packets● writing and drawing tools● children's Plant Growth Graphing papers, from Week 3, Lesson 2● bean plants with rulers● About Plants chart, from previous lessons● <i>From Seed to Plant</i>, Gail Gibbons Flag page 20.● Bean Time-Lapse video (https://www.youtube.com/watch?v=w77zPAAtVTuI), optional
Opening 5 minutes	<i>Your plants are getting bigger. Today you will complete another entry to record changes that have happened since your last</i>

	<p><i>observation. Just like before, record the date and the question you are investigating at the top of your paper. Draw and write your observational notes. Measure your plant and record its length on your Plant Growth graph.</i></p> <p><i>Then, talk with your group members about what you are wondering now about how plants grow and develop. Then we'll gather on the rug to share observations, think about the changes you noticed, and discuss your questions.</i></p>
<p>Investigation 10 minutes</p>	<p>As children work in small groups, observe how they record observations, measure and graph plant growth, and exchange questions. Support children to:</p> <ul style="list-style-type: none"> ● make close observations and record relevant details in their drawings; ● measure precisely and compare their measurements to their previous entries; ● develop and consider new questions, especially about leaves. <p>Provoke children's wondering with questions such as:</p> <p style="padding-left: 40px;"><i>Why do you think the leaves are getting larger?</i></p> <p style="padding-left: 40px;"><i>We know that one job of the roots is to absorb water. What do you think the job of the leaves might be?</i></p> <p style="padding-left: 40px;"><i>Do you have a question about that?</i></p>
<p>Discussion 15 minutes</p>	<p>Bring children back to the whole group with their plants, packets, and graphs. Invite them to share their observations of plant changes, referring to their notes and plants as they do. Likely, leaves will have grown larger and new ones developed; stems will have grown taller. Refer to and add to or amend children's original ideas on the About Plants chart, as appropriate.</p> <p>If time allows, show the first minute of the Bean Time-Lapse video.</p> <p style="padding-left: 40px;"><i>What new questions do you have about how plants grow and develop?</i></p> <p>Record children's questions on the About Plants chart. If children have not asked questions specifically about the function of leaves, begin that conversation.</p> <p style="padding-left: 40px;"><i>Each part of a plant has a job, or function. We know that one function of roots is to absorb water. What do you think is the function of the leaves?</i></p> <p style="padding-left: 40px;"><i>What makes you say that?</i></p> <p>Continue the conversation.</p>

	<p><i>Plants need food, but they do not eat like humans and other animals do. They make their own food. For plants to make their own food they need water, vitamins, air, and light.</i></p> <p><i>Let's think about how plants get what they need in different stages of development.</i></p> <p><i>Do you remember where the food came from when the plant was an embryo, inside the seed?</i></p> <p>Encourage children to refer to their packets. Arrive at and confirm a common understanding. [The cotyledons, part of the embryo, provide required food for the embryo to grow and develop.]</p>
<p><i>From Seed to Plant</i></p>	<p>Continue to facilitate group recall about plant development, stage by stage, based on the children's experiences and recorded observations. As is helpful, refer to the illustrations in <i>From Seed to Plant</i>, beginning with the flagged page and flipping through pages as the stages are described.</p> <p><i>A seed has an embryo, the cotyledons are part of that embryo, and water supplies nutrients.</i></p> <p><i>Once the seed has germinated, roots reach down and absorb water and other nutrients from the soil.</i></p> <p><i>A shoot grows up and we see the cotyledons on the stem.</i></p> <p>Pause to consider the cotyledons, if they are still attached on some of the plants. They may have begun to shrivel at this point. Alternatively, a child may have drawn a strong representation in their packet. Refer to the plant and/or child's drawing.</p> <p><i>Why do you think the cotyledon is shriveling?</i></p> <p>Facilitate thinking time and discussion. [As true leaves emerge, these become the plant's food source. The cotyledons (seed leaves) are no longer needed and do not continue to produce food for the plant.]</p> <p>Return to the illustrations.</p> <p><i>As the plant continues to grow, true leaves develop. This is where the plant makes its own food from nutrients in the water and soil, air, and sunlight.</i></p> <p>[Close book]</p>
	<p><i>This book makes more sense to us, now that we have been observing plants in real life. We can see why the leaves are so important! The roots absorb water and vitamins from the soil. These travel through the stem to the leaves. At the same time, leaves absorb light. The light provides the energy the plant needs to make its food.</i></p>

	<p><i>Think about this: sometimes we might pull leaves off plants, because they are interesting to us and we want to show them to someone else. If the plant is small and has just a few leaves, how do you think doing this might affect the plant?</i></p> <p>Harvest children’s ideas, highlighting understanding of the leaves’ function.</p>
Closing	<p><i>Today we learned about how important leaves are to plants. Each species, or kind, of plant needs a certain amount of water, air, light, and nutrients, but they all need some of each of these things.</i></p>
Standards and Practices	<p>W.3 Routinely produce a variety of clear and coherent writing in which the development, organization, and style are appropriate to the task, audience, and purpose.</p> <p>SL.1.2 Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.</p> <p>SL.2.2.b Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.</p> <p>2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.</p> <p>2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.</p>
Ongoing assessment	<p>Reflect on the class discussions, and review children’s packets.</p> <p>What evidence do children show of their understanding about the function of the various structures of a plant?</p> <p>How do children incorporate and consolidate knowledge they are developing through Text Talks, Writing, Studios, and Science lessons?</p>

Notes
