

Unit 4: The Power of Pollinators

WEEK 2 Lesson 1

Science and Engineering: Life Sciences
Ecosystems: Observing and Discussing Seed Germination

Note: Depending on the time elapsed, the seeds set up in bags with favorable conditions in Week 1, Lesson 3 have probably sprouted. However, sprouting can take differing lengths of time even among the same kinds of seeds. If another day is needed for sprouting, consider reversing the order of Week 2 lessons and adapting the discussion according to this change.

Big Idea	Living things grow and change over time.
Guiding Question	Why is it important to understand how living things grow and change over time?
Content Objective	I can observe seeds placed in different conditions and make observations about how they germinate. (2-LS2-3 (MA), Practice 4)
Language Objective	I can discuss what conditions are required for seeds to sprout, based on my observations. (SL.1.2)
Vocabulary	condition: a characteristic of the environment (that allows seeds to germinate or not) germinate: to begin to develop into a plant sprout: to begin to grow
Materials and Preparation	<ul style="list-style-type: none">● Science and Engineering packets● writing and drawing tools● started seeds in plastic bags● started seeds in soil, those with popsicle stick markers● What conditions do seeds need to germinate? chart, from Week 1, Lesson 3 <p>Prepare for Lesson 2: Soak pumpkin, corn, and pea seeds in separate containers of water for 24 hours (enough for each pair of children to have two of each kind of seed, plus several extra). The seeds should be plump so that children will be able to split them in half and look inside them.</p>

	<p>In addition, germinate a few of each type of seed in plastic bags and/or in soil. These will be used to compare how different seeds develop over time. Children will look at the growth and development of these seeds in Week 3 Studios.</p>
<p>Opening 5 minutes</p>	<p><i>Today you'll work in your groups to observe your planting investigations and record your findings so far.</i></p> <p><i>If you planted in plastic bags, very carefully open the bag and unwrap the seed to see what's happening. Look, record your observations, and talk about what you find. Then, as gently as possible, wrap the seeds back up so they can continue to grow.</i></p> <p><i>If you planted seeds in soil, talk about what you think might be happening underground. Then, very carefully, one person in your group will use the stick to dig up the seed. Look, record your observations, and talk about what you find. Then, as gently as possible, replant that seed so it can continue to grow.</i></p> <p><i>Think and talk together: Do you have enough information to answer the question you are testing, or do your seeds need more time? Do the conditions need to change?</i></p> <p><i>You have fifteen minutes to work. Then we'll come back together to share our observations and discuss the question we are exploring: What conditions do seeds need to germinate?</i></p>
<p>Investigation 15 minutes</p>	<p>Children observe and record the seeds they started in different conditions, and then discuss their findings with group members. Encourage children to support their conclusions with evidence from their observations. Have they answered their question, or does the investigation need more time?</p> <p>For seeds in bags: If one bag of seeds has sprouted much less successfully than the other, ask children to consider where they might move those seeds to give them what they need to grow.</p> <p>For seeds in soil: Encourage children to first predict and discuss what might be happening in the soil. Make sure they dig carefully so as not to damage the developing seed. Once they have finished their observations, these seeds should be replanted.</p> <p>Circulate to listen to children's conversations and support their work.</p> <p>Have children return successfully sprouted seeds to their same locations</p>

	and move or change unsuccessful seeds according to different (hopefully better) conditions they identify.
Discussion 10 minutes	<p>Facilitate a whole group discussion, with each group sharing their observations and their ideas related to the question, What conditions do seeds need to germinate? Encourage them to cite evidence from their observations to support their conclusions.</p> <p>Specific to seeds planted in soil, ask the small groups: <i>What changes have you noticed since planting these seeds in the soil?</i></p> <p>Ask the whole group: <i>We have talked about seeds needing light to grow. Some seeds have sprouted even though it's dark underground. What do you think about this?</i></p> <p>Harvest any new questions and record them on the chart.</p>
Closing	<p><i>Today, we reported back on our investigations and started answering the question about what conditions seeds need to germinate. We also generated some new questions.</i></p> <p><i>Tomorrow we will look inside some seeds to see what's there.</i></p>
Standards and Practices	<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>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.</p> <p>How do children cite evidence from their observations in discussion in both small and large groups?</p> <p>Are children using their observations to think about conditions that are most favorable for seed germination?</p> <p>What questions come up, and what do they tell you about children's understandings and misconceptions?</p>