



## Investigating Plant Needs

<b>Video Focus Question:</b> How do plants live in so many different types of places?	<b>Length of video:</b> 8 minutes 22 seconds
<b>Science Standards</b> TN 1.LS1.3 Analyze and interpret data from observations to describe how changes in the environment cause plants to respond in different ways. TN 1.LS.2.1 Conduct an experiment to show how plants depend on air, water, minerals from the soil, and light to grow and thrive. TN 1.LS2.3 Recognize how plants depend on their surroundings and other living things to meet their needs in the places they live.	
<b>Main Learning Goal:</b> Develop an understanding of what plants need to be able to grow and survive.	
<b>Science Content Storyline</b> Plants have basic needs for survival, just as animals do. For plants, those needs are air, water, and sunlight. Observing plants in different environments shows that plants need air, water, and sunlight to grow and survive.	
<b>Ideal Student Response to Focus Question:</b> Plants need water, air, and sunlight to grow and survive.	

### Preparation

<b>In Advance</b> <ul style="list-style-type: none"> <li>Preview the video.</li> <li>Decide whether you would like students to brainstorm individually, in small groups, or as a class about what plants need (timestamp 0:49).</li> <li>Determine how you would like to track students' predictions of the plant investigation (timestamp 5:36)</li> </ul>	<b>Materials</b> <b>Teacher</b> <ul style="list-style-type: none"> <li>Butcher paper or board for brainstorming</li> <li>Marker or dry erase marker for brainstorming</li> </ul> <b>Student</b> <ul style="list-style-type: none"> <li>Paper and writing utensil if they will be making their predictions independently</li> </ul>
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## Key Activities and Reflection

Timestamp	Science Content Outline	Guidance to Support Students
0:20	Introduction	Play the introduction for students. Pause the video and ask students what they think the video will be about. For each answer, ask students if they can share what they heard that makes them think the video will include that idea. Accept all answers at this point. Once students have shared their ideas, resume the video.
0:39	Brainstorming about plant needs	Continue the video until timestamp 0:49 so students can learn about the brainstorming activity. Ask students to think about what they think plants need to live. You may wish to have students draw a picture and then share their ideas. Alternately, you can have students call out their ideas while you make a list on the board or on butcher paper. Ask probing questions to find out more about why students think their idea is a need that plants have. Accept all ideas at this point.
0:49	Student ideas about plant needs	As you play the next section in the video, ask students to pay attention to the ideas that some other children had about what plants need. Stop the video at timestamp 1:36 and ask them which ideas the class had that were the same as the students in the video and which were different. If you have a class list, consider putting a mark next to the ideas that were the same. Alternately, this might be a good opportunity to practice making a Venn diagram together. For your own information, the student ideas in the video come from the needs of plants and some common conceptions about them.
1:36	Comparing ideas about plant needs	At timestamp 1:36, the video shows a table that is made from the ideas of the students in the video. The video will then show three different examples of plants to help students collect evidence about what plants need. Consider making a large version of the table in the classroom or having students create their own so they can check off the ideas for each example. This will help emphasize what plants need while also giving students practice creating and reading tables.
3:53	Plant Investigation	Have students study the completed table. Go through each plant need that the students listed and talk about whether all the plants in the video had that item. They should see that not all the plants got plant food or had a person to take care of it, so discuss that those must not be things that plants need. Then, share that it looks like all the plants got water, sunlight, and air, but emphasize that we cannot say for sure that all plants need these items. In the next part of the video, the educator will do an investigation to determine what happens if a plant does not have all three needs met, which will give more evidence that plants do need water, sunlight, and air.

5:36	Make predictions for plant investigation	Ask students what they think will happen to each one of the four plants in this investigation. You can have them do this individually or together as a class. Create a chart for the class or ask students to write or draw their ideas. Ask probing questions to find out more about why students think their idea is a need that plants have. Accept all ideas at this point. If needed, continue video to 6:18 to let students see how the investigation is set up. This might help them make predictions about what they think will happen.
6:19	Results of plant investigation	Play the conclusion of the plant investigation and ask your students to compare their predications to what happened. You may also choose to develop a class explanation for the question, “what do plants need to live?” Ask students to make a claim (an answer) based on the investigation, then use evidence from it to support their claim. Finally, have them share reasoning to link science ideas for their evidence. For example, a student might claim that a plant needs water to live. Their evidence might be that the control plant got water and looked good but the plant with no water was wilted with hard, crunchy leaves. The reasoning might be that water helps keep the leaves strong and standing up or that plants need water to make food. <i>Note that this is reasoning that 1<sup>st</sup> grade students might include. If you are using this video with other grades, you might expect different reasoning based on what they have learned.</i>
7:51	Conclusion	Play the conclusion of the video to challenge students to look for plants around them and to consider how the plant gets the water, air, and sunlight it needs.

### Extension Activities

- Each of the videos in the Science Streams series has an introduction by people in different departments at the Aquarium. This offers an opportunity to talk about the many different types of jobs it takes to run an aquarium.
- Consider recreating the investigation from the video with a different type of plant.
- Using the challenge in the conclusion as a starting point, look around the school, school yard, or student’s home for plants. Ask students to share how different plants get the sunlight, water, and air they need to survive.
- If you use this video in combination with the Animal Needs video, you can also complete the NGSS performance expectation K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.