

Will They Grow?

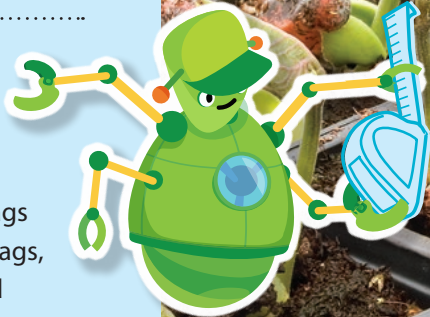
TIME ESTIMATE

day 1 day 2 day 3 day 4 day 5



SHORT ON TIME?

To save time, this activity can be done in whole class experiments using two or three dry bags and two or three damp bags, with results analyzed and discussed orally.



POSSIBLE MATERIALS

- ☐ lima bean
- ☐ paper towel, damp
- ☐ permanent marker
- ☐ soil
- ☐ plastic zip bags

PREPARATION

Tell your class that in this activity they will try to grow lima bean plants from their seeds. Point out that the lima beans we eat are the seeds of the plant.

INVESTIGATIVE PHENOMENON

Seeds require certain environmental conditions before they will grow.

Phenomenon Explained Students explore the **investigative phenomenon** by trying to grow lima beans in dry and wet environments, recording observations, and comparing the results.

Form a Question After reading the opening paragraph and studying the photo, students should form a question about how the environment affects plants. If students struggle, discuss aspects of the environment that might affect plant growth. **Sample answer:** How does a dry environment affect plants?

STEPS 1 and 2 Have students choose between a dry or wet environment and then prepare their bags of beans.

STEP 3 Point out that their data tables should show the dates of observation and whether or not anything grew. Students should also note how growth changes over time. Remind students to make observations every few days and record their findings on their data table. As an extension, students whose lima beans sprout can transplant them to potted soil to see the effect of the new environment.

STEP 4 Have students compare observations of the wet and dry bags and summarize findings in a cause-and-effect statement. **Sample answer:** The beans in a wet environment sprouted but those in a dry environment did not. The water in the environment caused the bean to sprout.

- **Make a Claim** Students should state a claim about plants needing water to grow.
- **Evidence** Students should cite their observations of the different environments in which they tried to grow the beans.
- **Reasoning** Students should reason that since only the beans in wet environments sprouted, plants must need water to grow.



FORMATIVE ASSESSMENT

MAKING SENSE OF PHENOMENA

Students gain understanding of how the environment affects plant growth as they explore the **investigative phenomenon**. They should connect this to the **anchoring phenomenon** by recognizing that the flamingos are affected by their different environments as well. Those in the wild are a different color than those in captivity because their environments are different.

REMEDIATION If students struggle to connect the **investigative phenomenon** back to the **anchoring phenomenon**, have them discuss what aspect of the flamingos' environments might differ and how that difference is like water for the lima beans.

Activity Outcome

Students should try sprouting lima beans in different environments in order to recognize the effects of environment on organisms.

Performance Indicators

	compare and analyze lima bean growth in two different environments
	make and support a claim about plants' need for a wet environment
	generalize that environment affects organism growth