

Grade Level: Second
Unit: Life Science
Lesson 10 Title: Plant Needs

NGSStandard: 2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow

Learning Target: Plan, Conduct, and Collect data from an investigation to form a conclusion of what plants need in order to grow.

Success Criteria:

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***Teacher Note:** You will need to plant chia seeds 4 to 5 days prior to this module.

Disciplinary Core Ideas:

LS2.A: Biodiversity and Humans

- Plants depend on light and water to grow.
- Plants depend on animals for pollination or to move their seeds.

Science and Engineering Practices:

- Asking Questions
- Constructing Explanations
- Arguing from Evidence
- Obtaining, Evaluating, and Communicating Information

Crosscutting Concepts:

- Patterns
- Structure and Function
- Cause and Effect

Performance Expectations:

- LS2-Plan and conduct an investigation to determine if plants need sunlight and water to grow.

Materials

For the Teacher:

Chart paper
Article “Chia – Why, What, and How?”
Sprouted Chia Plant
Teacher Picture Packet “Chia Plants and Pets”

For the Students:

Journal
Hand Lens

For Each Group of Students:

Chia Seeds
Soil and Cups for Planting

Procedure:

1. **Teacher Demo:** Tell students that (you) they are going to use (your) their observation skills to describe something new. **(SKIP Distribute hand lenses and a plate containing a small of chia seeds to each group but do not tell students what they are observing. Have students use their hand lens** to describe and list properties in their journals. Ask students to share their observations about the items and predict what they are. Someone will probably guess seeds, but won't know what kind.

2. Display the article "Chia - Why, What, and How?" from the site SuperKids Nutrition. Read the article to identify the why, what, and how about chia seeds. Some students may have or have seen the Chia Pets sold in stores. Show and discuss the pictures from the picture packet Chia Plants and Pets."

3. Next show students some chia seed sprouts that were planted 4-5 days earlier. Allow students time to observe and describe the chia sprouts.

4. Next ask students to come up with ideas about how they could grow their own Chia seeds. **Ask students, "What do seeds need to grow?" Create a chart with the question at the top and list student ideas.**

5. Students will say that the seeds need water, soil, and sunlight. **Ask students how we could investigate if the chia seeds need all three things to grow.** Allow students to come up with different combinations to investigate. Possible combinations are listed below:

Soil and sunlight - **no water**
Soil and water - **no sunlight**
Sunlight and water - **no soil**
Soil - **no sunlight or water**
Water - **no sunlight or soil**

Teacher Tip:
Consider using a spray bottle to water the plants using the same number of sprays each time.

Sunlight - **no soil or water**

Students do not need to come up with all combinations. Have students collectively choose two combinations to test. Then you choose one or two other combinations. **Soil and sunlight but no water** and **soil and water but no sunlight** must be selected.

6. Facilitate a discussion to lead students to the understanding of making this a fair test. Stress that to make everything fair all the controlled variables are kept the same. The amount of seeds in each cup needs to be the same. If the seeds are planted in soil, the amount of soil needs to be the same. Tell students that the amount of water may vary depending on where the plant is located, but that if the plant is getting water the goal is to keep the plant moist.

7. (SKIP) Then divide the class into four or five groups and have each student/group prepare the seeds to test the combination they are given.

8. After all seeds have been “planted” have groups decide where in the classroom their seeds need to be placed to meet the requirements of the test.

9. Distribute the student activity pages “A Chia Seed Investigation” and work with students to begin the activity. **Copy additional pages as needed to observe and record several days (not necessarily consecutive) of the investigation.** The student pages include all possible six of the possible testing combinations you will need to cross out the two not being tested. Or, you may choose to design your own data collection sheet.



10. Throughout **the next 2 – 4 weeks students will need** to periodically observe the plants and record detailed and dated observations. Then form a conclusion on what a plant needs to grow.

Opportunities for evaluation in this model include:

1. Students’ observations and recordings for the student activity “A Chia Seed Investigation.”

Teacher Tip: Use the student activity pages to create a booklet.

Math Connection:
2.MD.1 Measure and estimate lengths in standard units (Centimeters)
2.MD.4 Measure to determine how much longer one object is than another.
2.MD.10 Draw a bar graph with up to four categories

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