

Plant Adaptations

Strand	Life Processes
Topic	Plant adaptations
Primary SOL	4.4 The student will investigate and understand basic plant anatomy and life processes. Key concepts include d) adaptations allow plants to satisfy life needs and respond to the environment.

Background Information

Plants have many adaptations which help them to survive. Cactus roots are very shallow and spread out wide in order to absorb as much water as possible when it rains. Vines curl around objects as they climb toward the sunlight. Flowers attract insects to increase pollination. Some leaves have points on the ends which helps rain to drip off of them. Mimosa plants are sensitive to moisture loss; their leaves close when touched. Seeds have specific adaptations to be spread by wind, water, and animals. Some plants are protected by thorns and others, like milkweed, produce poison in order to protect themselves from animals. Plants can have structural adaptations or physical attributes that help them meet a life need. Plants can also have behavioral adaptations, or certain types of activities they perform, which help them meet a life need.

Materials

- Picture book about plants
- Copies of the Plants Field Investigation worksheet
- Reference materials, including trade books, encyclopedias, and Internet access

Vocabulary

adaptations, structural adaptations, behavioral adaptations, predators, reproduce, spiny, poisonous, produce, seeds

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Begin the lesson by having students discuss the following questions: “What is a plant?” and “What things do plants need to survive?”
2. Introduce the terms structural and behavioral adaptations. Give examples of how people adapt to the changing seasons. You can include how people dress for the weather and how people use heating and air conditioning in homes to deal with temperature changes.
3. Read a book about plants and animals in various ecosystems. Ask students to identify adaptations the animals and plants have made in the story.

Procedure

1. Divide the class into research groups of two to three students per group and hand each group a Plants Field Investigation worksheet.
2. Lead the students out to the playground or a nearby field. Ask students to inventory the variety of plants and choose one type to investigate.
3. Have students work together as a team to complete their Field Investigation by completing the Plants Field Investigation worksheet.
4. As students are working, monitor to ensure that students are answering all questions and be available to answer any questions they have.
5. When students have completed their field investigation sheets, return to the classroom and have students research the plant they chose. They will create plant trading cards including the following information: name of plant, ecosystem, adaptations, and illustration of the plant.
6. Have the teams share their findings with other students.

Conclusion

1. Have students play a “War” style game or create their own game with their plant trading cards. Ask them to focus on the adaptations to see which adaptation would help that plant survive the longest or reproduce the most in the wild.

Assessment

- **Questions**
 - What types of adaptations do plants have?
 - Why does a plant need adaptations?
 - What is the difference between structural and behavioral adaptations?
- **Journal/writing prompts**
 - Many plants have spines or thorns that protect them from being eaten. Think about ways that people might protect themselves from animals. Write to explain the similarities in how plants and people might defend themselves.
 - Imagine that you are a green thorny vine growing in a shady area with lots of predators. Think about what your life might be like as you try to survive. Write a story about a day in your life as a vine.
- **Other**
 - Evaluate the trading cards for accuracy.

Extensions and Connections (for all students)

- Have the students pick an ecosystem and create a 3-D model of the plants found in that area and explain the adaptations the plants have for its environment.
- Ask someone at a local greenhouse or nursery to visit the classroom and bring a variety of plants with different adaptations.

Strategies for Differentiation

- To facilitate research of assigned plants, the teacher can create a “web quest” that guides students through the research process and provides choices of the most

appropriate, useful, and limited number of Web sites for student use. Provide guided, open-ended questions.

- Create a PowerPoint, or a photo story to present information to the class.
- Use a concept map to display the information about a particular plant.
- Access trading cards to create a review game for students needing additional practice with the concept.
- Provide a plant trading card template to be filled out with required information.
- Students create a “super plant” that could survive on Mars or in another hostile environment and write what adaptations it would need.

Plants Field Investigation

Names of Researchers: _____

Date: _____

Location: _____

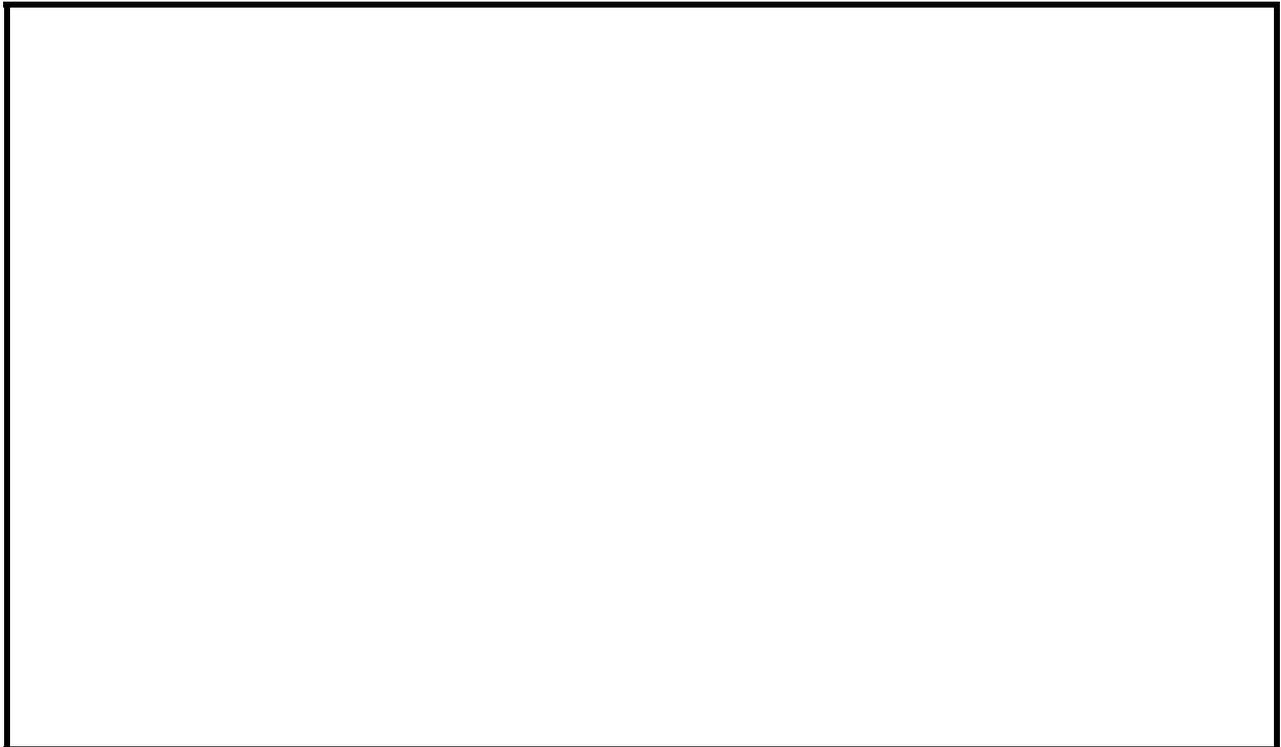
Plant types to be observed (choose one):

- Trees
- Grasses
- Bushes
- Vines
- Flowers

Investigative question: What adaptations can be observed in _____

_____?

Draw a typical plant that is found in your research study and label all parts. Don't forget to draw the roots as part of the plant but do not pull up a plant to examine the roots.



How many of this plant type are found on the school yard?

1-5 6-10 10-20 20-100 more than 100

Where are the plants located?

What structural adaptations would this plant have?

Would this plant have any behavioral adaptations?

Are there any seeds on the plant or on the ground beneath the plant?

How are the seeds dispersed; by animals, wind, falling beneath the parent plant?

What characteristics or adaptations make it different from the plants other teams are studying?

Look at the plants carefully for any damage caused by animals or signs that an animal is using the plant for food.