

Cactus Adaptation

5th Grade

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References:

Columbus Public School 5th grade curriculum guide
www.oceanoasis.org/teachersguide/activity8.html

Benchmarks:

- GLI LS-4: Summarize that organisms can survive only in ecosystems in which their needs can be met (e.g., food, water, shelter, air, carrying capacity and waste disposal). The world has different ecosystems and distinct ecosystems support the lives of different types of organisms.

Objectives:

- Students will describe biomes including the tundra, the desert, the grasslands, tropical rain forest, and deciduous and coniferous forests. They will link the climate and organisms to appropriate biomes. They also need to understand that each habitat has limited resources. We will examine how cacti adapt to their environment by capturing water and storing water more efficiently than most plants.

Material

- Sponges
- Toothpicks
- Water
- Scissors
- Lamp or flashlight

Initial Observation/Demonstration:

- Ask students: What are the factors that effect where plants and animals choose to live? This will lead to the definition of biome.
- Using photos and the internet, allow the students to observe the characteristics of different biomes.
- Could a polar bear survive in the tropical rainforest? Why not? Etc...
- What changes in biomes have been made in Ohio since European settlement (Deciduous Forest and Wetlands have been converted to Grasslands for crops)
- What Biome is Los Angeles? (This will show how humans have altered the landscape from a desert to habitable land with water (mis)management.

Initial Observations:

- Students should note that biomes are defined by the climate conditions and plants and animals that live in a region. Students should discuss that biomes are not static and that human activities can vastly change biomes

Procedure:

- Divide students into small groups, handing each group a sponge.
- Instruct the students to draw a cactus on their sponge and help them to cut the cacti out.
- Ask them why they are using sponges to represent cacti? What conditions do cacti live in? What biome?
- When students finish their cacti have them weigh them. Next the students should wet their sponges and reweigh them. The students should make a chart with all of the weights before and after water.
- Students should squeeze out their sponges and then add needles (toothpicks)
- How do needles help cacti survive?
- After the brainstorm is complete shine a flashlight on upright cacti and note the shadows from the needles. Students should note that needles provide shade.

Discussion/Summary:

Continue the discussion asking if students can think of additional organisms in other biomes that have adapted to fit their biome.

Additional Work:

- Have the students work together to create dioramas for unique biomes.