ANIMAL ADAPTATIONS TO THE DESERT

Students perform experiments and activities to understand Sonoran Desert animals' adaptations to their environment.

Arizona Science Standards

SC03-S4C4-01, SC00-S1C1-02

Objectives

Students should:

- Identify adaptations of animals that allow them to live in specific environments.
- Formulate questions about objects, organisms, events and relationships in the natural world.

Materials

- Copy of *Student Handout - Animal Adaptations to the Desert* for each student
- Buckets of water
- Paper towels
- Chalkboard
- Markers or crayons

Vocabulary

Adaptation
Evaporation

Background

Organisms adapt to their environment. Desert environments pose interesting challenges for survival, and desert animals have developed unique adaptations for living here.

Setting the Stage

1) Dip a paper towel in a bucket of water and wring the excess water into the bucket. Take the moistened paper towel and wipe it across the chalkboard. Watch the moisture begin to disappear. Ask the students, "What happened to the water?" (It evaporated into the air.) Explain that here in the desert, it is hot and dry, and water disappears or **evaporates** into the air all the time.
2) Ask the students, "What kinds of things does water evaporate from?" (clothes on a line, puddles, pavement, etc.) If they don't think of it, ask the students, "Does water evaporate from plants and animals, too?" (yes)
3) Ask, "Do you think it is hard for living things to live in the desert where there is not much water and it evaporates away?" (yes) "How do they survive?" (They should generate examples of how animals/plants are able to survive in the desert.)
4) Explain that these are examples of **adaptations** – body parts or actions – that help animals and plants live here. Tell them you will be going outside to do a series of activities to demonstrate adaptations that desert animals have to help them live in the desert.

Adaptation Activities

Adaptation 1: Resting in Shade or in a Burrow, Active at Night

1) Bring the buckets of water and paper towels outside. Find a spot where pavement is in sunshine and in shade.
2) Have the students dampen and ball up a paper towel and write their initials on the pavement on both the sunny side and shady side. Ask them to closely observe which one dries up more quickly. (the one in direct sunshine) Ask, "What does this tell you about the sunny side?" (that water dries up more quickly in the sun) "Which side feels hotter?" (the sunny side)
3) Ask, "If you were an animal living out in the desert, what might you do to keep cool and try not to lose much water?" (rest in the shade at the hottest times of day, come out when it is cooler)
4) Explain that many desert animals are active either at night or in the cooler hours of the day. They pass the heat of the day resting in deep shade or down in burrows out of the sun.

Adaptation 2: Panting or Sweating

1) Ask the children: "What happens to us when we get hot and our body tries to cool us down?" (We sweat.) "How does sweating cool us off?" (Our sweat evaporates and cools us.)
2) To illustrate this, have the students roll up their sleeves and dip one arm in the bucket of water, leaving the other arm dry. Have them wave both arms in the air. Ask: "Which arm is cooler? Why?" (Evaporation on the

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Answer Key to the Desert Adaptations Handout

There are six adaptations, covered in the activities and discussion above, depicted in the handout.

- a fox in its den in the heat of the day
- a javelina resting in the shade beneath a tree
- a kangaroo rat active at night
- a bird panting
- a desert tortoise resting in its burrow and storing water in its bladder
- a jackrabbit sitting in the shade and cooling its blood through its big ears

The black bear does not belong in the picture.

wet arm cools the air down around the arm, making it feel cooler.) "Do you think very many desert animals sweat?" (no) Why?" (Possible answer: few desert animals sweat because there is so little water to drink to replace the water lost.)

3) But there are other ways to keep cool. Ask, "What do dogs do to keep cool?" (pant) Explain that when they pant, dogs' blood is cooled as it passes through their tongue because water evaporates from dogs' tongues and cools them down. Coyotes, mountain lions, birds, and many other desert animals pant to cool down.

Discussion

1) Return to the classroom. Pass out *Student Handout - Animal Adaptations to the Desert* to each student. Point out that part of the picture represents daytime, the other part night. Ask the children to look at the picture and describe the adaptations they see that animals have to save water and keep cool. (They should notice those already discussed – a fox in its den in the heat of the day, a javelina resting in the shade beneath a tree, a bird panting, a kangaroo rat active at night. Have them circle these.)

2) Ask, "Can you see any other animal adaptations for life in the desert in this picture?" (The desert tortoise and jackrabbit are both resting in the shade. These animals have other desert adaptations as well. Desert tortoises store water in their bladders and can go a long time without drinking, but when it is hot they retreat to their burrows. Jackrabbits rest in the shade and use their big ears to cool down their blood. Their warm blood circulates into their ears and is cooled when exposed to the cooler air.) Point out these animals in the picture, explaining their adaptations. Have the children circle them.

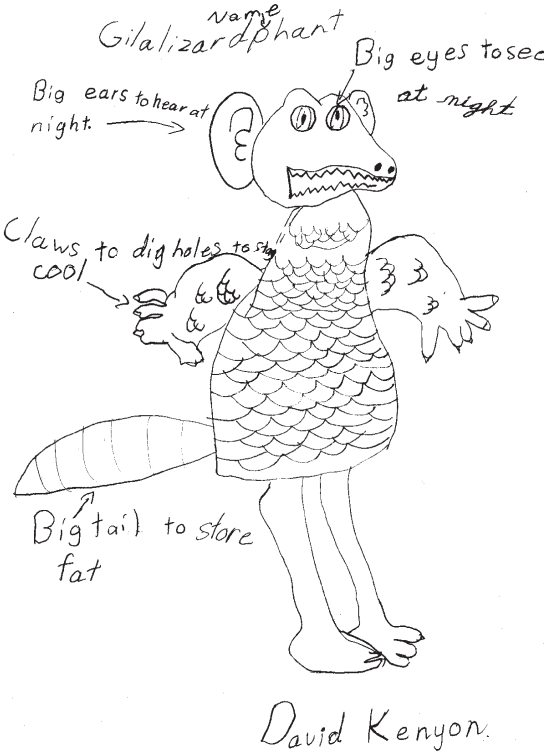
3)Then ask, "Which animal does not seem adapted to the desert?" (The black bear.) "Why?" (It has thick hair and is out in the sunshine in the middle of the day.) Have them put an X over the bear.

4)Have the students color the picture. Remind them to distinguish between day and night.

Extension

Create a desert creature!

The students can create and draw their own animal or plant with its own adaptations for desert survival. Have them share their creations with each other to see if others can figure out the creatures' adaptations.



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STUDENT HANDOUT

ANIMAL ADAPTATIONS TO THE DESERT