Sun Shelters

TEACHER INTRODUCTION

This lesson has been adapted from "Design a Sun Shelter for UV-Sensitive Animals", retrieved from www.buggyandbuddy.com

Lesson Focus: In this activity, students first make an animal craft out of pipe cleaners and UV-sensitive pony beads. The beads change colors when exposed to UV light from the sun. Students are then challenged to use recyclable materials to create shelters to protect their animals. Students test out their shelters by taking them outside and observing whether their animals remain white or change colors. If the animal changes colors, the shelter needs improvements!

Question:

How can we protect an animal from the warming effect of sunlight?

Standard(s):
K-PS3-1. Make observations to determine that sunlight warms materials in Earth’s surface.
K-PS3-2. Use tools and materials to design and build a model of a structure that will reduce the warming effect of sunlight on an area.

Practice(s):
Developing and Using Models
Constructing Explanations and Designing Solutions

Objectives: Students will be able to:

● Use available materials to build a model shelter
● Test a design and make changes if needed

Literacy Connections:
The Sun and the Moon by Carol Ciniami DeCristofano (Publisher:HarperCollins, 2016)
The Lizard and the Sun by Alma Flor Ada (Publisher: Random House, 1997)

Materials:
Per pair of students:

● Pipe cleaners
● UV-Sensitive pony beads
● Variety of recyclable materials (paper plates, bowls, cardboard boxes, egg cartons, cups, styrofoam pieces, etc.)
● Construction paper
● Tape, scissors
● Markers

Introduction:

Read the books The Sun and the Moon and The Lizard and the Sun.

Discuss with students why they think the sun is important to people and to animals.
Part 1: Building the animal craft

Start the activity by having each student build an animal out of pipe cleaners and pony beads. Some students may make simple caterpillars or snakes, others may make more intricate animals like horses, dogs, snails, or lizards. Students can test that their pony beads work by taking them outside or taking them to a sun-filled window. They should observe how the beads change color. Guide students to the conclusion that these beads change color when the sun’s light gets to them.

Part 2: The need for a shelter

Have a discussion with students about what things their animals need to survive: what do they eat? Do they need to drink water? Where do they live?

Bring up the topic of the sun - can the sun ever hurt animals? How?

You may want to talk about humans as an example. How can the sun hurt humans? (for example: sunburn, overheating, dehydration) How do humans protect themselves from the sun? (for example: hats, sunglasses, umbrellas, sunscreen)

Brainstorm with students: How could we protect our animals from the sun?

Part 3: Building a shelter

Challenge the students to work in pairs to design and build a structure that will protect their animals from the sun.

After some amount of time, take the shelters outside or to a sun-filled window. Have the students make observations to determine whether their shelter is fully protecting their animal. Are the pony beads still changing color?

If the structure did not fully protect the animal from UV light from the sun, students should redesign or modify their shelter to improve it.

Students should use the “Shelter from the Sun recording sheet” to record their final design. You may want to do a share-out to allow students to learn from each other about what problems they encountered and how they fixed them.