



Shadow Puppets

Suggested Curriculum links (Grade 4)

Physical Science:

Light

- 303-4 investigate how a beam of light interacts with a variety of objects, in order to determine whether the objects cast shadows, allow light to pass, or reflect light
- 303-5 predict the location, shape, and size of a shadow when a light source is placed in a given location relative to an object

Materials

- Paper
- Pencils
- Clay/play dough
- Scissors
- Tape
- Flashlights

Overview

Each animal has individual requirements for food, water, shelter and a place to have babies. In this activity, students will research animals and poster to advertise their habitats for animals to move in.

Objectives

- To investigate how shadows form.

Background

The place where an animal lives is called its habitat. In Newfoundland we have wetland, barren and forest habitats. An animal's habitat has space and materials for them to find or make a shelter (birds, beavers, and snowshoe hares) and an available food source including particular plants or animals in the same area.

When habitats are lost (naturally or due to human impacts) it is not able to support as many animals. There may not be enough food or space for the same number of animals to survive there.

Procedure

1. *Review how light travels and what are shadows.*
Discuss with your class how light travels (in a straight direction from a source) and how to produce shadows (they are produced when light cannot pass through an object).
2. *Make shadow puppets with their hands*
Project a light on a wall. Prior to making a shadow puppet, ask the student to predict where the shadow will appear. Ask a student to make a shadow animal with their hands. Can they make the image larger or smaller?
3. *Make a trout shadow puppet.*
This part may be done in groups. Ask the students to cut out the trout shadow puppet and tape it to a straw. Stick the straw in some clay or play dough to make it stand up straight.



At the Fluvarium

Join us for *The Nature of Light and Sound!*

Students will become familiar with the properties of light by investigating how it interacts with various objects in the natural environment. Students will learn the importance of sound through the investigation of the sounds that animals make and how they are detected.

4. *Set up a shadow experiment.*

Tell the students that they are going to test how shadows get larger and smaller. Ask the students to set up a light source about $\frac{1}{2}$ meter away from the wall. Have them tape a sheet of paper on the table and on the wall that the light is shining on. Using a ruler, have the students mark the following distances away from the light source (10, 20, 30 40 cm). Have the students predict how big the shadow will be for each distance.

5. *Test the shadow sizes at the different lengths.*

Ask the students to place their trout shadow puppet at the 10 cm mark. Have them mark the size of the shadow on the sheet of paper on the wall and label it. (Students should mark the distance between the nose and the tail). Have them test their puppet and shadows at the other distances and record their results. Ask the students to take down the sheet of paper on the wall and measure the size of the trout with a ruler. How much bigger did it get each time?

6. *Data analysis*

Ask the students to take down the sheet of paper on the wall and measure the size of the trout with a ruler. How much bigger did it get each time? How does it compare with the actual size of the puppet? Ask the students to make a line graph of their results.

Extensions

- Ask the students to draw wetland animals and cut them out to make their own shadow puppets. Have them make a shadow play about wetland habitat.
- Give students various materials that light can and can not pass through to make shadow puppets. This can include tissue paper and cellophane. Have them make colourful shadow puppets.
- What happens with the light when the shadows pass through something? Try making shadows through water!

Resources

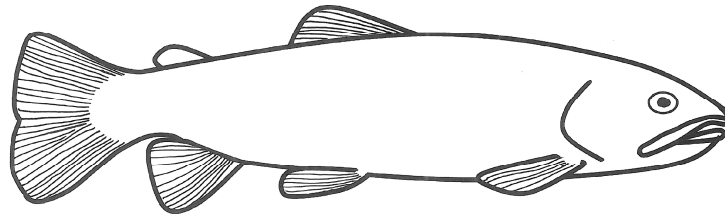
Websites

Science Games for Kids: Sun, Light and Shadows

<http://www.sciencekids.co.nz/gamesactivities/lightshadows.html>

Online flash game about shadows.





Trout Outline