

All About Light

Third Grade

Activity: 2

Time: 1 Class Period

General Description

Understanding that white light is made up of a variety of colors is a fairly difficult concept. Making this concept visual will enable students to grasp the scientific ideas more easily. Students will develop their own understanding of what is happening when they see a rainbow.

Objectives

Students will investigate the properties of white light.

Students will discover what colors make up white light.

Arizona State Standards

SC03 S1C1 PO1 Formulate relevant questions about the properties of objects, organisms, and events of the environment using observations and prior knowledge

SC03 S5C1 Energy and Magnetism: Investigate different forms of energy

W03 S3C2 PO1 Record information (e.g., observations, notes, lists, charts, map labels and legends) related to the topic

W03 S3C2 PO3 Write in a variety of expository forms (e.g., summary, newspaper article, reflective paper, log, journal)

Teacher Background

Students can understand that light is a form of energy that appears to us as white light. However if we use a variety of strategies, we can help students see that white light is actually a combination of colored light.

Materials (per student)

Science journal

Pencil/pen

Colored pencils/markers

White or light-colored wall

Dishpan

Water

Small mirror

Flashlight

Procedure/Exploration

1. Turn off the lights and ask: *Is light a type of energy?* (Yes. Explain that energy is a power from electricity or other sources that makes machines work and produces heat.) *Which part of the body needs light energy to work?* (The eye. Explain that we can see objects only when light rays bounce off objects and into our eyes.)
2. Turn the lights back on. Perform the following experiment with the class.
 - a. Place a dishpan on a desk about two feet away from a wall. Fill the pan three-quarters full with water.
 - b. Place a mirror inside the pan so that half the mirror is underwater.
 - c. Turn off the room lights and shine a flashlight on the part of the mirror that is underwater.
 - d. A rainbow should appear. If it does not, slowly change the angle of the mirror.
 - e. Slowly change the angle of the flashlight as it shines on the underwater part of the mirror.
3. Provide students with a science journal and have them write down three observations about what they saw. Have the students answer the following questions:
 - a. What did the water do to the light?
 - b. What did the mirror do to the light?
 - c. Draw and color the rainbow you saw. Try to get the colors in the right order
 - d. Where else have you have seen a spectrum or rainbow.
4. Instruct students to complete the questions on the reproducible.

Answer Key: Observations—answers may vary; 1. The water bent the light, splitting it into its spectrum; 2. The mirror bounced the split light back toward the wall so it could be seen; 3. Rainbows should be labeled in the following order: red, orange, yellow, green, blue, indigo, violet; 4. Spectrums appear elsewhere as rainbows in the sky, in a spray of water from a hose on a hot day, on the surface of soap bubbles, on CDs, etc.

Writing extension

Have students write a descriptive paragraph about a time when they would like to see a rainbow. Descriptions should include how raindrops cause rainbows to appear.