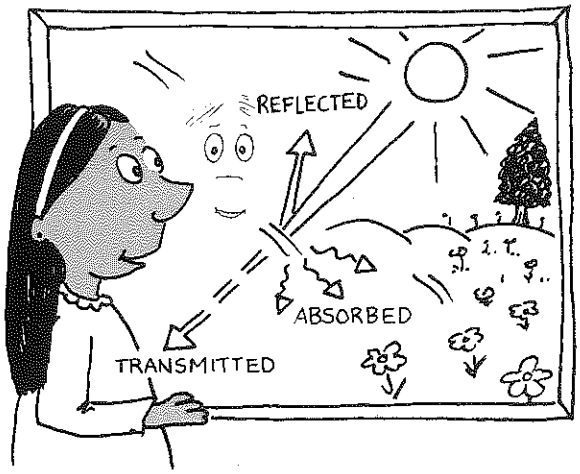

Preparation

1. Title the butcher paper "Light Interactions."

2. Find places in the classroom or outdoors where students can experience the contrast between sunlight and shade and where the light is strong enough to cast good shadows.

3. Lay out the materials in a central place so that students can use what they need to investigate their light riddles.

4. Ask students to fill out their Preassessment Lab Sheet.

Getting Started

Ask everyone to look at a particular object, close their eyes for a few seconds, and then open them.

Can you see the object when your eyes are closed? Why not? Can you see things in the dark? What do our eyes need in order to see? What is light? Where does light come from? What happens to light when it hits objects? Record ideas, questions, and descriptions of how light behaves on the Light Interactions chart.

Action

1. Divide the class into pairs. Pass out the Light Riddles Lab Sheets and review it with the class. Show students the materials they can use to solve the riddles. Have students use their Lab Sheets to record their investigations.

2. Assign each pair one of the riddles to solve. Let different pairs work on the same riddle, sharing their discoveries with the class later.

3. Give students 15–20 minutes to explore their riddle. If some pairs finish early, give them another riddle to investigate.

4. Go through the riddles one by one and ask each pair that worked on the problem to share its discoveries with the class. Accept all ideas. Add new ideas and questions to the Light Interactions chart.

Assessment

Title a section of the Light Interactions chart "Properties of Light" and use it to review what the class has discovered about light.

What did we find out about light? What happens when light hits a mirror? What happens when it hits a window pane? What happens when it hits an object, such as you? What happens when light rays pass through water? What happens when light strikes something white? What happens when it strikes something black? What new questions do you have about light? How can you answer your questions?

Digging Deeper

• Play with shadow and light by making shadow puppets with paper and dowels or by making photograms using light-sensitive paper.

• Have students use shadows to trace the sun's movement through the day. In the morning, trace the shadow of a tree or bush, using chalk on pavement. Trace it again at intervals throughout the day. Discuss what causes the shadow and why it changes shape.

• Make a game of learning the new vocabulary words for the properties of light. After introducing the terms, assign a word to each team of students and ask them to come up with a demonstration of *refraction, reflection, absorption,* and *transmission.*

Teacher Reflections

• Did students' ideas about light's properties change as they solved their riddles?

• In what ways do students need to investigate these concepts further?

• How can you help students focus their questions about light?

In the Garden

Start seedlings now for the Color World activity coming up. You will need one seedling with at least two pairs of true leaves for each group of 4–6, plus two for the class. Take this opportunity to start heat lovers such as peppers, cucumbers, eggplant, melons, or other tender crops for planting in the garden after the soil warms. An old trick for starting hard-to-transplant seeds such as cucumbers and melons is to plant them in small squares of sod. Cut a thick piece of sod from a field, turn it grassy side down, and cut it into pieces about 5 cm (2 inches) square. Plant a seed or two in each piece. Place the sod squares in a container and water them thoroughly. See Gardening Know-How for the '90s, *(pp. 41–42).*