



*Explore.
Question. Experiment.
Integrate.*



What Can Light Move Through?

OVERVIEW

In this lesson the children will explore the concepts of transparent, translucent, and opaque through the use of everyday materials. They will test these materials with a flashlight to see if light can shine through them. Additionally, the following learning goals can be achieved as the children participate in ScienceStart! activities:

Science

- Becoming familiar with the science cycle of reasoning
- Understanding how to make a prediction and compare it with results
- Exploring and observing light sources in children's everyday world

Literacy

- Listening to stories for information
- Listening for, identifying, and finding repeated phrases in print
- Becoming familiar with alphabet letters – T/t

Mathematics

- Making graphs and comparing data
- Exploring “near” and “far”
- Categorizing materials

Center-Based Play Materials & Activities to Support Today's Science Learning



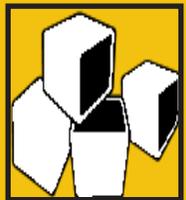
Dramatic Play

- Set up a home theme, adding battery powered candles, lanterns, lamp and a string of white or colored lights.



Art Center

- black and white materials such as white paint and chalk on dark paper
- Create simple line drawings. Make blobs of black paint. Imagine them to be shadows – what could they be shadows of?
- Paper strips to make line collages



Block Area

- Use colored or clear cellophane to make windows for block building.
- Shine flashlights around the blocks and block buildings. Where does the light go?



Manipulatives

- With scissors or plastic knives, cut along straight or curved lines drawn on paper or traced on playdough.



Large Motor Play

- Walk around your neighborhood or your school looking for the variety of light fixtures and the ways that light is used around the community.
- Roll balls across the floor or throw beanbags at targets to experience how light travels in a straight line.



Science Table

- A variety of flashlights, lanterns and batteries for children to explore - talk about flashlight safety.
- photos of other light sources: traffic lights, lamps, campfires, and so forth

What Can Light Move Through?

Concepts:

Light can pass through some objects and be blocked by others.

Learning Goals:

Children will test a variety of materials to see which ones allow light to pass through.

Vocabulary:

light	material
opaque	result
translucent	transparent

Materials:

flashlights	colored cellophane
plastic wrap	foil
wax paper	cardboard
tissue paper	water
mirror	

Read and Talk About:

Right Outside My Window by Mary Ann Hoberman



Things to Talk About:

Did the light pass through all of the materials?

Why?

Which material stops most of the light?

Did the light pass through some things and not others? Which of your predictions were correct?

What happens when the light is blocked?

Where else have you seen shadows?

How does a shadow get its shape?

What Can Light Move Through? - Language and Literacy

Speaking & Listening	Introduce the terms <i>transparent</i> , <i>translucent</i> , and <i>opaque</i> within the context of today's activity. Use these words frequently as you do the activity so the children can become familiar with them. Your use of the words helps children understand them.
Reading Comprehension	<p><i>Right Outside My Window</i> makes use of repetitive text. The author begins by saying "There is always something new to see right outside my window." This phrase is then repeated on each page. Encourage children to notice the repeating phrase and to read it along with you.</p> <p>When you finish reading, ask the children to help you make a list of the things the author saw outside the window.</p>
Alphabet Awareness	Today's letter is T/t for <i>transparent</i> and <i>translucent</i> . Point out how to make this letter as you create a chart for the science activity. Encourage children to come up and make the letter on the chart.
Phonological Awareness	<p>Listen for the repetitive phrase in today's story. Write this phrase on the chart paper and then have the children make a list of things they see outside.</p> <p>Read the list and have the children repeat the phrase after each item. For example:</p> <p><i>I see a squirrel... right outside my window.</i></p> <p><i>I see a big pine tree... right outside my window.</i></p> <p><i>I see three cars driving by... right outside my window.</i></p> <p><i>I see the rain in the puddles... right outside my window.</i></p>
Print Awareness	As you read today's book, point out the phrase <i>right outside my window</i> on each page. Show the children how they can find it by looking for the special print called <i>italics</i> . Ask the children why they think the author used italics.



Mathematics:

Sort and categorize materials by how light travels (or doesn't travel) through them: *transparent*, *translucent*, and *opaque*.

Make a graph that shows what you find.

Count and compare the number of each type of material on the graph. Write the numerals.

What Can Light Move Through?

Science Inquiry Cycle:

Reflect and Ask

Talk about when the children have seen shadows. Does everything make a shadow? What kinds of things don't make shadows? What kind of objects does light go through?

Plan and Predict

Show the children the materials you have. Work together to make a plan for how to use the materials to see if light will shine through. Plan how to record the results.

Act and Observe

Experiment with the different materials, trying to look through them. Shine a flashlight on the wall. Hold the plastic wrap in front of the light; observe what happens. Next try the wax paper, then the cardboard. Support children in talking about their observations.

Report and Reflect

Discuss other materials that could be used. Display the chart created to identify transparent, translucent, and opaque materials. Ask the children to suggest other materials that might be opaque. Have them point to a transparent material.