

1-PS4-3. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [*Assessment Boundary: Assessment does not include the speed of light.*]

Practice: Planning and Conducting Investigations

Crosscutting Concept: Cause and Effect

TASK 1

What happens when objects are in the path of a beam of light? Design an investigation to explore this question. For this investigation, you have a flashlight, a piece of cardboard, a piece of wax paper, and plastic bag.

A. Write the steps in this investigation:

B. What do you expect to find out:

C. Do your investigation.

D. What happened with each material? Explain why you think this happened? Complete the table below.

	What Happened?	Why do you think this happened?
Cardboard		
Plastic Bag		
Wax Paper		

Lightly adapted from: http://www.sedl.org/pubs/mosaic/units/Mosaic_Grade1.pdf

TASK 2

Materials List: set of materials for each group of three students: flashlight with batteries, two index cards with a hole (use standard-sized punch) in the center of each, and small mirror

Give students the vocabulary: *transparent*, *translucent*, and *opaque*.

Ask students to predict which materials will fall into which category.

Then ask students to use a flashlight to test the provided materials to determine the categories:

- transparent (all light is visible)
- translucent (some light is visible)
- or opaque (no light is visible).

Ask students to answer the following questions:

How did you decide which material belonged in which category?

What happened when a material was transparent?

What happened when a material was translucent?

What happened when a material was opaque?

Adapted from:

http://www.vrml.k12.la.us/curriculum/elem/1st/Social/1_SS_SC_CC/01%20SCI_Grade_1/units/1_sc_un6.doc

TASK 3

Can you block a beam of light? David has a flashlight and he wants to investigate this question. He is wondering what will happens when he shines the light on things throughout his house. He's interested in the windows, the wall, the doorways, and a piece of wax paper with some artwork he did last week.

How do you think he should conduct his investigation?

TASK 4

It's a sunny day at school and Ashley notices that there are shadows on the ground in the classroom. Why are their shadows on Ashley's classroom floor?

- A. The light from inside the classroom is blocked by the building and makes a shadow inside the classroom.
- B. The sunlight from outside is blocked by the building between windows and makes a shadow inside the classroom.
- C. No light is being blocked in this example.
- D. The sunlight reflects into the classroom.

TASK 5

What word is used to describe an object that reflects 100% of the light that falls on an object?

Source:

https://www.teachengineering.org/view_activity.php?url=collection/van_/activities/van_troll/van_troll_lesson02_activity1.xml