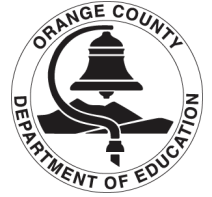




# Let the Light Shine (1st Grade)

## Distance Learning Lesson



### SYNOPSIS

In this introductory physics lesson, young scientists will get the opportunity to explore the wonderful world of light by experimenting and classifying how different items react when placed in the path of a beam of light. Using just a flashlight and household items, this hands-on science activity can start with hours of fun and lead to lifelong learning.

### NGSS STANDARDS SUPPORTED

**1-PS4-3:** Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

### PHENOMENA

Light behaves differently when it encounters different materials.

### MATERIALS

- Science Notebook or piece of paper
- Scientific Vocabulary Guide (see Supplemental Support Section)
- Coloring tools: crayons, color pencils, markers
- Beam of sunlight (near a window) or a flashlight
- Items to shine light on: foil, wax paper, lampshade, mirror, clear plastic bag, cardboard, fabric, sponge, plastic toys, sunglasses, drink glasses, blocks, anything that the student would be interested in shining a flashlight on; something with sequins or sheer fabric. Get creative!
- [Science of LIGHT for Kids](#) - GenerationGenius Video
- [Discussion board/slideshow](#) (make a copy of this file to use for your classroom)

### ESSENTIAL QUESTIONS

- What will happen to the beam of light when we shine it on different items?
- What did you notice about the beam of light when it hit the object?
- How can items be placed in groups based on how they react to the light?

## LESSON

Facilitator (Teacher/Parent) Does	Student Does	Questions to Move Thinking Forward
<p><b>Engage</b></p> <p>Spread out the collected materials for the experiment or have students collect materials in a spot with a good beam of light (next to a window) or with a flashlight.</p> <p>Introduce the experiment by asking the students “What will happen to the beam of light when we shine it on different items?”</p> <p>Demonstrate, if necessary, how to use the flashlight and review flashlight safety rules.</p>	<p><b>Engage</b></p> <p>Explore or collect the material.</p>	<p>What will happen to the beam of light when it hits the object?</p>
<p><b>Explore</b></p> <p>Allow the student to do some free exploration.</p> <p>Have them go around and find items that will also do the same thing to the beam of light.</p> <p>Have them group the items based on similar characteristics.</p> <p>Encourage the student to draw a picture of the items in their science notebook.</p>	<p><b>Explore</b></p> <p>Use the flashlight and experiment by shining light on the items, or placing the items in the path of the beam of light.</p> <p>Group items found.</p> <p>Draw pictures of the items found.</p>	<p>What do you notice about the beam of light shining on the different objects?</p> <p>Can you put the items into groups?</p> <p>Did any of the items fit in more than one group?</p>
<p><b>Explain</b></p> <p>Ask the student questions about their findings and drawings.</p> <p>Ask them to describe what they drew.</p>	<p><b>Explain</b></p> <p>Record what was observed when the beam of light hit each item, and how the items are grouped together.</p> <p>Explain and describe what was drawn.</p>	<p>What happened when the light hit this item?</p> <p>How many different groups did you make?</p> <p>What characteristics did each group share?</p>

## LESSON (continued)

Facilitator (Teacher/Parent) Does	Student Does	Questions to Move Thinking Forward
<p><b>Engage (Reflect)</b></p> <p>Introduce the concept for the activity by holding a mirror next to the light (or flashlight). Ask the students what they think will happen if you shine the light on the mirror.</p> <p>Ask them to describe it by telling you or writing in their science notebook, what will happen to the beam of light when it hits the mirror.</p> <p>Demonstrate the experiment by putting the mirror in the path of light.</p> <p>Spread out the collected materials and ask the student if they can find all the items that the light bounces off of, just like the mirror.</p>	<p><b>Engage (Reflect)</b></p> <p>Explain what will happen to the beam of light when it hits the mirror.</p> <p>Explore or collect the materials, use the flashlight and experiment shining the light on the items, or placing the items in the path of the beam of light.</p> <p>Group all the items that the light bounces off of.</p>	<p>What do you think will happen if we shine our light on these items?</p> <p>What other items can you find that the light bounces off of, like the mirror?</p>
<p><b>Explore (Reflect)</b></p> <p>Go through the items with the students and help them with their exploration.</p>	<p><b>Explore (Reflect)</b></p> <p>Guess or explain what will happen when the light hits each item.</p> <p>Continue to experiment and shine the light on each item.</p>	<p>What happened to the beam of light?</p> <p>Which items did the light bounce off of?</p>
<p><b>Explain (Reflect)</b></p> <p>Help them to come up with a description and explanation of what happened to the beam of light when it hit the different surfaces.</p> <p>Introduce the scientific vocabulary word <b>Reflect</b>, and allow the student to further elaborate on the meaning.</p>	<p><b>Explain (Reflect)</b></p> <p>Describe/record observations and explain what happened to the beam of light when it hit the different surfaces.</p> <p>Elaborate on the meaning of the vocabulary term.</p>	<p>Can you think of something else that will reflect light?</p>

## LESSON (continued)

Facilitator (Teacher/Parent) Does	Student Does	Questions to Move Thinking Forward
<p>Example: When our light hit the mirror, it bounced off and ended up going in a different direction. This is called reflected light.</p> <p>To help further their understanding of the concept, have students watch the <a href="#">Science of LIGHT for Kids</a>.</p>	<p>Watch the video on reflected light.</p>	
<p><b>Engage (Transparent)</b></p> <p>Introduce the concept for the activity by holding a clear plastic bag next to the light (or flashlight).</p> <p>Ask the students what they think will happen if you shine the light on the bag.</p> <p>Ask them to describe it by telling you or writing in their science notebook, what will happen to the beam of light when it hits the plastic bag.</p> <p>Demonstrate the experiment by putting the clear plastic bag in the path of light.</p> <p>Spread out the collected materials for the experiment or have students collect materials in a spot with a good beam of light (next to a window) or with the flashlight. Ask the student if they can find all the items that the light passes through, just like the plastic bag.</p>	<p><b>Engage (Transparent)</b></p> <p>Explain what will happen to the path of light, when it hits the plastic bag.</p> <p>Explore or collect the materials, use the flashlight and experiment by shining light on the items, or placing the items in the path of the beam of light.</p>	<p>What will happen if we shine our light on this clear plastic bag?</p> <p>Can you find other items that the light completely passes through?</p>
<p><b>Explore (Transparent)</b></p> <p>Go through the items with the students and help them with their exploration.</p>	<p><b>Explore (Transparent)</b></p> <p>Guess or explain what will happen when the light hits each item.</p> <p>Continue to experiment and shine the light on each item.</p>	<p>What happened to the beam of light?</p> <p>Which items did the light completely pass through?</p>

## LESSON (continued)

Facilitator (Teacher/Parent) Does	Student Does	Questions to Move Thinking Forward
<p><b>Explain (Transparent)</b></p> <p>Help them to come up with a description and explanation of what happened to the beam of light when it hit the different surfaces.</p> <p>Introduce the scientific vocabulary word <b>Transparent</b> and allow the student to further elaborate on the meaning.</p> <p>Example: When the light hits the clear plastic bag, it completely passes through. Items that the light can pass through are called transparent.</p>	<p><b>Explain (Transparent)</b></p> <p>Describe/record observations and explain what happened to the beam of light when it hit the different surfaces.</p> <p>Elaborate the meaning of each vocabulary term.</p>	<p>Can you think of something else that is transparent?</p>
<p><b>Engage (Translucent)</b></p> <p>Introduce the concept for the activity by holding a piece of paper next to the light (or flashlight).</p> <p>Ask the students what they think will happen if you shine the light on the paper.</p> <p>Ask them to describe it by telling you or writing in their science notebook, what will happen to the beam of light when it hits the paper.</p> <p>Demonstrate the experiment by putting the paper in the path of light.</p> <p>Spread out the collected materials for the experiment or have students collect materials in a spot with a good beam of light (next to a window) or with the flashlight. Ask the student if they can find all the items that some of the light can pass through, just like the paper.</p>	<p><b>Engage (Translucent)</b></p> <p>Explain what will happen to the beam of light when it hits the paper.</p> <p>Explore or collect the materials, use the flashlight and experiment by shining light on the items, or placing the items in the path of the beam of light.</p> <p>Collect all the items that some of the light can pass through.</p>	<p>What will happen to the beam of light when it hits the paper?</p> <p>Can you find other items that some of the light can pass through?</p>

## LESSON (continued)

Facilitator (Teacher/Parent) Does	Student Does	Questions to Move Thinking Forward
<p><b>Explore (Translucent)</b></p> <p>Go through the items with the students and help them with their exploration.</p>	<p><b>Explore (Translucent)</b></p> <p>Guess or explain what will happen when the light hits each item.</p> <p>Continue to experiment and shine the light on each item.</p>	<p>What happened to the beam of light?</p> <p>Which items can some of the light pass through?</p>
<p><b>Explain (Translucent)</b></p> <p>Help them to come up with a description and explanation of what happened to the beam of light when it hit the different surfaces.</p> <p>Introduce the scientific vocabulary word <b><i>Translucent</i></b> and allow the student to further elaborate on the meaning.</p> <p>Example: When the light hits the piece of paper, it blocks some of the light, and some of the light can pass through. Items that block some of the light are called translucent.</p>	<p><b>Explain (Translucent)</b></p> <p>Describe/record observations and explain what happened to the beam of light when it hit the different surfaces.</p> <p>Elaborate on the meaning of the vocabulary term.</p>	<p>Can you think of something else that is translucent?</p>
<p><b>Engage (Opaque)</b></p> <p>Introduce the concept for the activity by holding a piece of cardboard next to the light (or flashlight).</p> <p>Ask the students what they think will happen if you shine the light on the cardboard.</p> <p>Ask them to describe it by telling you or writing in their science notebook, what will happen to the beam of light when it hits the cardboard.</p>	<p><b>Engage (Opaque)</b></p> <p>Explain what will happen to the beam of light when it hits the cardboard.</p>	<p>What will happen to the beam of light when it hits the cardboard?</p>

## LESSON (continued)

Facilitator (Teacher/Parent) Does	Student Does	Questions to Move Thinking Forward
<p>Demonstrate the experiment by putting the cardboard in the path of light.</p> <p>Spread out the collected materials for the experiment or have students collect materials in a spot with a good beam of light (next to a window) or with the flashlight. Ask the student if they can find all the items that block the light, just like the cardboard.</p>	<p>Explore or collect the materials, use the flashlight and experiment by shining light on the items, or placing the items in the path of the beam of light.</p> <p>Collect all the items that block the light.</p>	<p>Can you find other items that block the light?</p>
<p><b>Explore (Opaque)</b></p> <p>Go through the items with the students and help them with their exploration.</p>	<p><b>Explore (Opaque)</b></p> <p>Guess or explain what will happen when the light hits each item.</p> <p>Continue to experiment and shine the light on each item.</p>	<p>What happened to the beam of light?</p> <p>Which items blocked the light?</p>
<p><b>Explain (Opaque)</b></p> <p>Help them to come up with a description and explanation of what happened to the beam of light when it hit the different surfaces.</p> <p>Introduce the scientific vocabulary word <b><i>Opaque</i></b>, and allow the student to further elaborate on the meaning.</p> <p>Example: When the light hits the piece of cardboard, it blocks the light. Items that block the light are called Opaque.</p>	<p><b>Explain (Opaque)</b></p> <p>Describe/record observations and explain what happened to the beam of light when it hit the different surfaces.</p> <p>Elaborate on the meaning of the vocabulary term.</p>	<p>Can you think of something else that is opaque?</p>

## LESSON (continued)

Facilitator (Teacher/Parent) Does	Student Does	Questions to Move Thinking Forward
<p><b>Elaborate</b></p> <p>Have the students review the vocabulary terms and give an example of each term. (Example: The mirror reflected the light. What does reflect mean again?)</p> <p>Have the students share some of the items that they put into more than one group and why.</p> <p>Have the students share their pictures and findings.</p>	<p><b>Elaborate</b></p> <p>Review vocabulary terms and item groups.</p> <p>Share with the class any items that went into more than one group.</p> <p>Share pictures with class.</p>	<p>What does reflect/transparent/translucent/opaque mean?</p> <p>What items did you put in more than one group? Why?</p>



## MODIFICATIONS

Synchronous	Asynchronous	Independent Learning
<p><b>Engage</b> Before putting the light on each item, ask the students the following question: “What will happen when I shine my light on this item?”</p> <p><b>Explore</b> Each student can do this experiment in their home. Have them gather items to explore and share results with class.</p> <p><b>Explain</b> Each student can have a different item that they present to the class and are responsible for explaining what happened to the class.</p> <p>Help them to come up with a description and explanation of what happened to the beam of light when it hit the different surfaces.</p> <p>Introduce the scientific vocabulary words for each description and allow the student to further elaborate on the meaning of each topic by writing a sentence or two in their science notebooks.</p> <p><b>Elaborate</b> Students can also share the pictures that they drew on the class <a href="#">discussion board/slideshow</a>.</p>	<p><b>Engage</b> During a digital class meeting or in a video, teachers can introduce the vocabulary and concepts.</p> <p><b>Explore</b> Students can use the accompanying <a href="#">discussion board/slideshow</a> to do the experiments and record their findings.</p> <p><b>Explain</b> The students can later share their drawing by uploading them to the class <a href="#">discussion board/slideshow</a>.</p>	<p><b>Engage</b> In a pre-recorded video, present the lesson and introduce the vocabulary terms.</p> <p><b>Explore</b> The students can do the experiment and draw in their science notebook.</p> <p><b>Explain</b> The students can later share their drawing by uploading them to the class <a href="#">discussion board/slideshow</a>.</p>

## SUPPLEMENTAL SUPPORT

### Scientific Vocabulary Guide

Opaque	An object that blocks the light completely
Reflected	Light that is bounced from an object in another direction
Translucent	An object that allows some light to pass through
Transparent	An item that light can pass through completely

### Background Video

Bill Nye the Science Guy - [S01E16 Light and Color](#)

### Teaching Suggestions/Helpful Tips

*Safety Reminder - remind students to never shine the flashlight directly in their eyes. Bright light can cause damage.*

This lesson can be broken up over a series of parts. Each vocabulary term will be the focus of the series;

Part 1 - Introductory and Reflective items

Part 2 - Transparent items

Part 3 - Translucent items

Part 4 - Opaque items and conclusion

The students can focus on finding items that will fit within this group, or the instructor can guide the students by placing out or suggesting different items each time.

### Suggested Items:

- Reflect -mirror, foil, metal utensil, sequins on clothing, smooth, shiny objects
- Transparent - glass/window, plastic bag, drink glasses
- Translucent- wax paper, plain paper, sunglasses, lampshade, thin fabric
- Opaque - cardboard, block of wood, dark thick fabric, shell, sponge