

Activity 1.3 Light Teacher Notes

Introduction

In this activity you will lead the students through an introduction to light as they view a presentation. Students will then explore the differences between light and dark.

Equipment

- Student Light and Sound Launch Logs
- iPad® tablets with Canvas by Instructure app
- Flashlight, any quality/brightness
- Colored lenses, 4 color, 1 set
- Handheld safety mirrors, 2
- Paper and tape or small reward stickers (optional)
- (Optional) Teacher iPad® tablet with Bobo Explores Light app

Procedure

Exploring Light

1. The teacher presents the presentation entitled *Exploring Light* found in the Canvas app in Activity 1.3 Light. Alternately, students may access this presentation in pairs or small groups.
2. As you work your way through the presentation, students will take notes and draw sketches in their Light and Sound Launch Logs.
3. Follow the steps below with your students as you work through these sections found within the app:
 - A. The Sun
 - i. Read the introduction and discuss with your students. They will count and record the number of lights they see in the classroom.
 - B. Lightning
 - i. Read the introduction and discuss with your students. Ask them if they have seen lightning and what it looks and sounds like.
 - ii. Click on the continue button to learn more. Students answer the following questions either individually or as a class:
How far away did lightning strike if you hear thunder 5 seconds after you see the spark? (1 mile)
How long would it take to hear thunder from a lightning strike 2 miles away? (10 seconds)
 - C. Shadows

- i. Read the introduction and discuss with your students.
- ii. Guide the students to draw a picture of the sun, themselves, and the shadow their body creates. You may also have them add other sources of light such as fire or lightning.

D. Reflection

- i. Read the introduction and discuss with your students. Follow the instructions with a set of mirrors and a flashlight.
- ii. Briefly discuss how mirrors work, and then have the students answer the question in their Launch Log under the Reflection section.
What would make the best mirror: ice, sand, or a leaf? Why? (Ice, because it has the smoothest surface for light to bounce off of.)

E. Color

- i. Read the introduction to the students and lead a demonstration with the flashlight and the red, green, and blue colored lenses. Ask students to identify what colors they see as the lights are mixed together.
- ii. Students answer the following question in their Launch Log:
What color do you see when the colors red, blue, and green are mixed together? (White)
Note: students will explore separating white light into the colors of visible light later in the module.

F. The Human Eye

- i. Read the introduction and discuss with your students.
- ii. Discuss with the students that it is the incoming light bouncing off of the object that enters the girl's eye and allows her to see the object.
- iii. Students complete the following statement in their Launch Logs:
"We see an object when light bounces off of it and enters our eye(s)."

Light and Dark

4. Now that the students have been introduced to basic concepts of light, they will apply this knowledge to understanding why we cannot see an object in total darkness if that object does not produce its own light.
5. Tape a small piece of paper to each child's palm. Small stickers or pieces of sticky notes may also be used for this activity.
6. Have the students describe the paper in their hand.
7. Ask students to hold their hands together close to their eye so only a small amount of light is able to enter.
8. Have students close their hands tightly so no light enters their hands.
9. Lead a discussion on whether students could see the paper in total darkness. If students could not see the paper, where did it go?

Conclusion Question for Digital Presentation

1. Why can you not see objects in total darkness?

Guide students to create a digital presentation to explain how we see objects. This can be a video response using the iPad camera or using apps such as the Popplet Lite or Stage™ apps. Students should include an explanation of why we cannot see objects in total darkness and explain that light must bounce off an object into our eyes for us to see the object.

Ensure that students understand that without light, we cannot see anything.