Cross-Curricular Activities Connected to Physical Science, Grade 1

The following activities from ***Light and Sound Waves,*** integrate math, social studies, English Language Arts (ELA), art, and more into physical science topics. These cross-curricular connections help students see how science is related to their lives, and the world they live in. These activities reinforce and extend ideas about how light and sound are used to communicate and are perfect for learning-from-home lesson plans. Permission is granted to incorporate these activities into teacher and parent lesson plans.

Seeing from a New Point of View (Literacy and Art)

Have students brainstorm what it would be like to live without the sense of sight. You may choose to explore The Black Book of Colors by Menena Cottin, Lucy's Picture by Nicola Moon, or other grade-appropriate books. Encourage students to come up with their own tactile art.

Glow-in-the-Dark Window Clings (Art)

Explore luminescent materials with this fun activity. Give each student a piece of waxed paper and a squeeze bottle filled with a mixture of clear or white glue and glow-in-the-dark paint (mix in a ratio of 2:1 glue to paint). Check the brightness of your mixture by turning off the lights. Students can use the mixture to create shapes on the wax paper. You can also supply cookie cutters as a mold. Allow at least 24 hours to dry, and then carefully peel away the wax paper. Have students share their masterpieces by turning off the lights!

What's Your Sign? (ELA)

Find resources on American Sign Language (ASL) or invite an interpreter to your class. Teach your students the ASL alphabet and have them learn to sign their name. You can also incorporate basic signs such as those for "mom," "dad," "please," "thank you," and "you're welcome."

Take a Walk and Listen (Movement education)

Incorporate movement and sound by taking your class on a listening walk. You can conduct your listening walk inside or out. Have students predict the sounds they might hear. It helps to bring a device to record the sounds so students can compare their predictions and results. Encourage students to cover and uncover their ears to see how the sound changes.

Instruments from Around the World (Social Studies and Music)

Take students on a virtual field trip around the world to explore musical instruments. For example, visit Japan for Taiko drums, Argentina for guitars, or Australia for didgeridoos. Have students review what causes vibrations in each instrument. You might create a bulletin board of students' favorites.

How Loud Is Too Loud? (Science and Math)

Use a decibel meter with students to measure different levels of sound. You can purchase a meter, but there are apps and online meters available as well. Have students come up with different places around the school where they would like to test the sound levels. Visit the locations, measure the decibels, and record the data. Create a graph or chart of the results to display.

Musical Vibrations (Music and Science)

Encourage students to think of other ways they can make music with vibrations. If you have access to musical instruments, provide an assortment for exploration. Explore how vibrations can be made by blowing air, plucking strings, or striking instruments.

Marching Band (Music)

Show a video of a marching band performing with their instruments. Have students march around the classroom making music with the drums and rubber-band boxes that they used in this lesson.

Kitchen Concert (Art)

Have students brainstorm instruments that can be made from common household items. For example, students can experiment with pitch using bottles, make a straw kazoo, drum on pots, or learn how to play the spoons. See what great ideas the class can come up with, and then have a kitchen concert!

Lesson 3

Can You Hear Me Now? (Science)

Encourage students to explore how well different sounds travel through the string phones. Suggested sounds to test include but are not limited to music, humming, tapping, low- and high-pitched voices, and whistling.

Long Distance Call (Math and Science)

Invite students to modify the string phones by replacing the string or the cups. Have students measure and then test different lengths or thicknesses of string or different types of materials to see which makes the clearest sound. Graph the resulting data to share results.

Talk Like the Animals (ELA and Science)

Research how different animals communicate, such as fireflies, whales, bees, termites, or elephants. Share this information with the class digitally or as a bulletin board display. Ask students to discuss how their lives would be different if they communicated like some of these animals.

Echoes (Science)

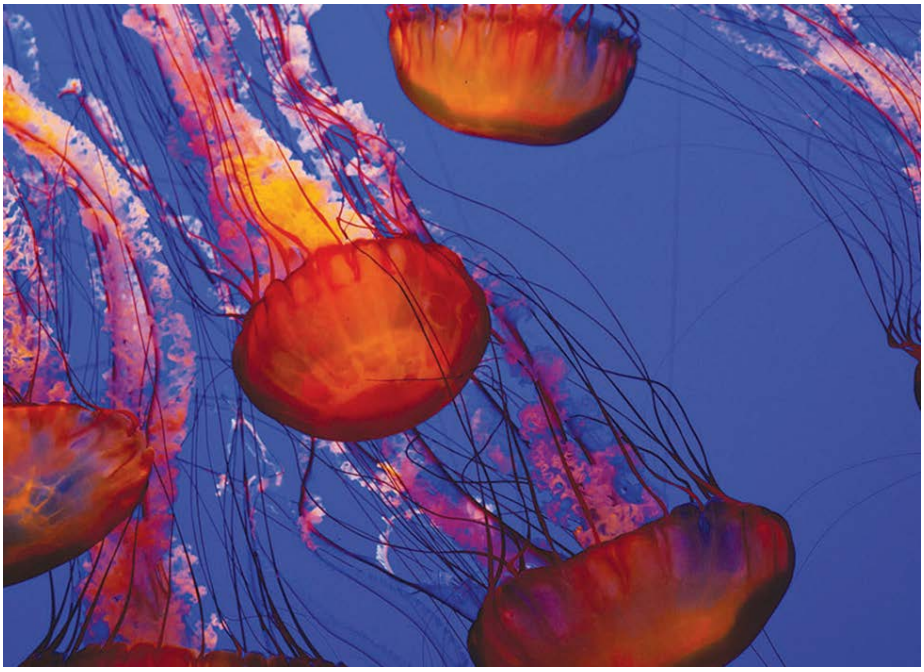
Encourage students to explore echoes, or how sound can reflect off objects. Use the Sound Vibration Barrier simulation to show students how sound can reflect off objects. Follow up with audio or video clips of echoes, and then let students explore how various materials can reflect their voices.

Pinhole Cameras and Viewers (Engineering)

The earliest form of photography used a pinhole viewer known as a camera obscura. Provide some information to students on pinhole viewers. Challenge students to come up with different materials to make a camera obscura, and then build and test their designs. This is a great activity to further explore light and connect light to how our eyes see images.

Organisms That Make Their Own Light (Science and ELA)

Ask students to find out how insects like fireflies and ocean animals like jellyfish produce their own light and what they use the light to do. To share their findings with the class, you may wish to create a bulletin board of the different organisms that use bioluminescence. If you wish, demonstrate luminescence using a glow stick.



Solar Superstar (Art)

Allow students to explore the different types of electromagnetic energy the Sun gives off. Give students a coloring sheet of the electromagnetic spectrum and have them color code the different waves. Explore how different colors absorb the Sun's energy using ice cubes and colored construction paper; make Sun prints; or investigate color-changing UV beads. You could also incorporate a discussion on Sun safety.

Architectural Dilemma (Engineering)

Present the following scenario to students, and then allow them to design a solution to the problem. Encourage students to develop a blueprint or build a model of their solution.

You have a window in your house that is letting in so much sunlight that algae is growing in your fish tank. You want to let less light come in through the window. What kinds of materials would allow some but not too much light in?

Make a Sundial (Social Studies)

Research the history of sundials and sundials around the world (the largest is in the U.S.). Have students make their own sundial. Flip a paper plate upside down and write numbers around the plate, similar to the numbers on a clock. Put a sharpened pencil through the center of the plate and take your sundial outside on a sunny day (not during Daylight Saving Time). Place the plate on the ground with the 12 facing north. Have students visit the sundial several times throughout the day to evaluate its accuracy.

Stretch and Squish (Science and ELA)

Curved mirrors produce surprising images. Encourage students to investigate with flexible mirrors and a flashlight to see how the reflection of the light beam is stretched. Students can also explore changing their own reflections with the flexible mirrors and with spoons. Have students connect these observations to phenomena by researching how funhouse mirrors are made and how they work.

Refraction (Science)

Draw a simple picture, like an arrow, on a piece of paper, and then look at it through a glass of water. Watch how it flips! Place a pencil or straw in a glass of water and have students explain what it looks like when they look at it from different angles.

It's Symmetry (Math and Art)

Bring science, math, and art together with symmetry drawing. Supply or have students bring in pictures that have been cut in half. Encourage students to use a mirror to help them draw the reflected side. Encourage students to find examples of symmetry in their environment. Students can take pictures of the objects they find and identify the lines of symmetry (reflection or rotational) for each object. Share students' discoveries with the class by creating a bulletin board.

What's the Message? (ELA)

Research communication methods such as Morse code, semaphore signal flags, light signals, heliographs, fog horns, and sirens. Share this information with the class digitally or as a bulletin board. You might pick one communication method and have students transmit and receive the code in pairs or groups.

Light and Sound to the Rescue (Social Studies)

Invite a first responder to come to class and share how their vehicles use light and sound to help them communicate during an emergency. Incorporate a class discussion on public safety.

Communicating with Light (Art and Social Studies)

Have students create a periscope or kaleidoscope. Research the history and art of kaleidoscopes. Create a kaleidoscope with a cardboard tube and Mylar reflective sheets or Mylar foil adhered to card stock strips. Cut the strips to fit the tube, and attach three strips in a triangle shape with the reflective sides facing in. Insert the triangle into the cardboard tube. Explore the patterns that can be made with the kaleidoscope. Ask students to research periscopes, instruments used for seeing around corners. Challenge students to design their own periscopes and use them to spy on the class next door!

Shadows Tell a Story (Social Studies and ELA)

Show a map of the world that includes Indonesia and explain that many Asian and Eastern countries celebrate the tradition of shadow puppets and have been practicing this art form for many centuries. Point out countries that practice or have practiced this tradition, such as Malaysia, Thailand, Cambodia, India, China, Egypt, and Turkey. Challenge students to learn more about this ancient art form in one or more countries. You might create a play using shadow puppets.