First Grade
Extension Activities

Light Energy

Light energy can come from many different sources,
including things in nature like fire or stars, or things made by people like lightbulbs and cell phones. All light helps us to see the world around us - without it, our eyes wouldn't see anything at all!

Light Absorption Scavenger Hunt:

When light hits an object what does it do? Can it pass through the object? Will it stop and not pass through? The answer is…yes! The amount of light that passes through an object depends on the properties of the object.

An object that blocks all light is called opaque. This means that if you shine a light on one side of the object, you won't see any shine through on the other side. An object that is thicker or darker in color is more likely to be opaque.

An object that blocks some light is called translucent. One way to find a translucent object is to hold it up to a light and see if you can still see some of the light coming through.

An object that blocks no light is called transparent. This means that you can see straight through and view clearly what's on the other side of the object.

Look around your home to find some things you think are opaque, translucent, and transparent. When you make a guess about each object, this is called your hypothesis. Test each object by putting a flashlight up to it or by holding it up to a light. Is there anything that surprised you?

Light Refraction:

Refraction is when light changes direction because it passes from one medium to another. An easy way to observe refraction is by using a clear glass and some water. Try this experiment with your student at home.

Fill up a clear glass with some water. Put a tall object (such as a pencil or ruler) in the glass of water so that it sticks out of the glass and observe how it looks from all sides. What do you notice? Move the pencil around in the glass of water. Does anything change?

Want to Know More?

Refraction occurs because light travels at different speeds through different substances. In this experiment, the light is traveling through water (a liquid) and the air (a gas). When it goes from one substance to another it refracts and bounces off the pencil and into your eyes at two different angles. Your eyes tell your brain that the pencil looks broken. Water also acts like a magnifier, so the part of the pencil that is under water looks bigger.

Shadow Puppets:
Create your own shadow puppets to tell a story while investigating the properties of light!

Materials:
- Art or school supplies (paper, scissors, pencils, markers, crayons)
- Tape or glue
- A stick (straws, popsicle sticks, or even sticks from outside all work perfectly)
- A flashlight or lamp

Try This:
1. Think about an idea for a story you would like to tell. Remember: a story should have a beginning, a middle, and an end. A good story will have characters and a setting where they take place.
2. Draw and cut out shapes for the characters in your story. They can be anything you like. Be creative! Remember that a shadow only shows the outline of an object, so you won't be able to see everything you draw onto your character.
3. Tape your characters to the end of a stick to create your shadow puppet.
4. Shine a flashlight at your characters and tell your story. Observe how the shadows change as you move them closer or farther from the light.

Want an Extra Challenge?
Build a shadow puppet theater by draping a light colored sheet over two chairs that are spread a few feet apart. Attach the sheet to the chairs with binder clips or tape so that it doesn't fall down and is stretched tightly. Place a lamp behind the theater so that it shines through the sheet. Then you're ready to tell your story!

Questions to Ask Your Student:
- What happens to the shadow when you move the puppet closer to the light source?
- What happens to the shadow when you move the puppet farther from the light source?
- Can you figure out how to make two shadows using only one shadow puppet? What would you need to change?

Use the boxes below to plan and draw out the story you want to tell. You can always add more boxes if you need to!

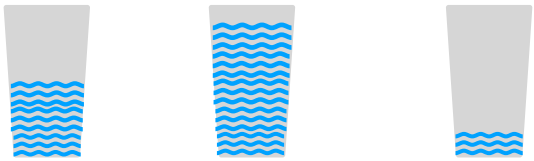
First…	Next…	Last…

Sound Energy

Sound is created when something vibrates. It might be the vocal cords in your throat when you speak, the surface of a drum when you bang on it, or the strings on the inside of a piano. Sound has volume - it can be loud or quiet. Sound also has pitch - it can be high, like the music of a flute, or low, like the music of a tuba.

Water Glass Music:

Explore pitch with this simple experiment.



Materials:

- 5-7 glasses of the same size.
- Water
- A metal spoon

Try This:

1. Fill each glass with a different amount of water.
2. Lightly tap on the outside of each glass with the metal spoon and listen for the sound made.
3. Organize the glasses in order from the lowest pitch to the highest pitch.
4. See if you can play a song you know or make up a new song!

Questions to Ask your Student:

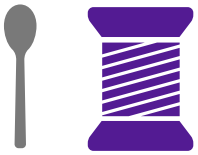
1. What do you notice about the water level in each glass as you go from low pitch to high pitch?
2. What happens if you use something other than a metal spoon to tap on the glass? Does the sound change?

Want to Know More?

You'll notice that glasses that have more water make a lower pitch sound and the glasses with less water will make a higher pitch sound. The glasses with more water slow down the vibrations, so the tone created is lower.

Big Ben:

See which state of matter is most efficient for transferring sound.



Materials:

- String
- A spoon
- Scissors

Try This:

1. Cut two pieces of string to about 12 inches in length each. Tie the strings to the spoon.
2. Wrap one string around your left index finger and the other around your right index finger. Hold the strings so that the spoon hangs in between your hands.
3. Gently bang the spoon against a hard surface like a table. Describe the sound you hear.
4. Now, put your fingers in your ears and gently bang the spoon again. What do you notice about the sound this time?

Want to Know More?:

Vibrations can travel through the solid string much faster than through gases like the air. This means that when you put your fingers in your ears the sound sounds much louder!