

Explore and hypothesize how sound reflects and is absorbed with simple experiments!

Standards listed on next page

Supplies:

- A container
- Rubber band
- Science log
- Rubber band
- Small towel

Objective

Students will use what they know about the properties of sound to hypothesize how it interacts when encountering a substance.

Outline of Video

1. Consider what causes an echo (00:23)
2. Recall that sound travels in a longitudinal wave, through all 3 states of matter (solid, liquid, gas) and it travels in the same direction from where it began.
3. Try speaking to someone next to you, then continue speaking as you face away. Compare the difference when facing and turning away. (00:56).
4. Write in your science log: "What happens when sound hits a wall" and form a hypothesis (1:39).
5. Stand 2 steps back from the wall and count to 10 while slowly getting closer to the wall. Then repeat while walking backwards away from the wall. What changed about your voice? (2:18).
6. After observing your experiment, learn about the three options for what happens to sound when it encounters a substance: reflection, diffusion, or absorption.
7. After learning about these three terms, consider what types of materials do you think would be good at absorbing sound? (4:22).
8. Test the properties of sound reflection and absorption with the supplies listed above.
9. Place the rubber band around the container. Pluck to hear the sound (5:22).
10. Jot down the question: "Will the sound be louder or softer after placing the towel in the container" and make a hypothesis about what will happen (5:55).
11. Try the experiment: place the towel in the container and pluck the rubber band again (with the same amount of force).

12. Observe and compare the sound of the rubber band from both states.
13. The towel absorbed some of the sound from plucking the rubber band and therefore the sound was quieter than without the towel.
14. DIY: Try clapping your hands in different spaces and notice if you can hear the sound bounce back. (7:27).

Kentucky Standards:

K-PS2-1, K-PS2-2. Simple tests can be designed to gather evidence to support or refute student ideas about causes.

KPS2-1. Scientists use different ways to study the world.

KLSI-1. Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.

K-LSI-1. Patterns in the natural and human designed world can be observed and used as evidence.

K-ESS3-3. Events have causes that generate observable patterns.

K-PS3-1. Make observations (firsthand or from media) to collect data that can be used to make comparisons.

1-PS4-1 Science investigations begin with a question. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

2-PS1-4. Scientists search for cause and effect relationships to explain natural events.

3-LS2-1. Construct an argument with evidence, data, and/or a model.

3-LS3-2,3-LS4-2. Cause and effect relationships are routinely identified and used to explain change.

4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-4. Science affects everyday life.

Ohio Standards:

K.PS.2: Some objects and materials can be made to vibrate and produce sound

3.PS.3: Heat, electrical energy, light, sound and magnetic energy are forms of energy.

5.PS.2 Light and sound are forms of energy that behave in predictable ways.