

## **Sound:** **Music to Our Ears**

By Emily Sohn and Diane Bair

### **Science Objective**

Sounds fill our lives, and in this book children explore what sound is and how sounds are made. They learn how sound travels through air, liquids, and solids. Vibrations are responsible for high and low and loud and soft sounds. Sound waves have energy, which decreases the farther the sound travels. Through observation and investigation, children discover the science behind sound.

### **iScience Puzzle: How Can You Make Music?**

Using a list of everyday materials, children create instruments to discover how to make sounds that they can use to make music. This hands-on activity helps children understand how sounds are made and the properties of sound, including loudness, softness, and pitch.

**Objectives** ► Children will:

- learn that sound is caused by vibrations.
- explore how to make sounds from everyday materials.
- understand that sound travels in waves.
- understand that pitch refers to sounds that are high or low.
- explore how sound travels through air, water, and solids.

### **Materials**

- cardboard boxes
- construction paper
- dried beans
- metal cooking pot
- metal spoon
- paper toilet tubes
- paper towel tubes
- plastic bottles
- plastic containers with lids
- plastic rulers
- plastic straws
- rubber bands

# Lesson Plan

## Before Reading

Investigation	Science Concepts
Play a recording of sounds from nature and have children name the sounds they hear.	Accessing prior knowledge gets children thinking about the topic.
Have children close their eyes as you make sounds with objects made of different materials. <i>Ask: Are all sounds the same? Do all sounds have the same loudness or softness, or volume?</i>	Making observations is fundamental to the study of science.
Give children a toilet paper tube. Let them experiment with ways to make sounds with it.	Making observations is fundamental to the study of science.
Play a recording of people singing a cappella. <i>Ask: Why are some people's voices low while other people are able to sing high notes?</i> Discuss children's answers. Then tell them that they are going to learn the answer as they read this book.	Accessing prior knowledge gets children thinking about the topic.

Explain that children will read about what sound is, how it is made, and how it travels. Encourage them to think about their own personal experiences as they answer the questions in the book.

## During Reading

Investigation	Science Concepts
<b>pp. 6–7:</b> Help children hear differences in sounds. Make some loud and soft sounds using one or two of the materials listed. <i>Ask: Which sound is soft? Which sound is loud? Which sound is high? Which sound is low?</i>	Properties of sound include loudness, softness, and high and low pitch.
<b>p. 8:</b> Keep pencils and rubber bands on hand so that you can demonstrate the concepts as children continue to read.	Using models is a valid approach to studying science.
<b>p. 9:</b> Have children pluck a rubber band to see how it vibrates.	Sound is based on the length of the vibrating object and the tension of the vibrating string.
<b>p. 10:</b> Draw the computer icon for sound. <i>Ask: Why do you think these lines stand for sound?</i> Relate the icon to the information on this page.	Sound is caused by vibrations, which travel through air, water, or solids.
<b>pp. 11–13:</b> Allow children time to explore how rubber bands vibrate. Have them tell why they think these objects vibrate and others do not.	A vibrating object's length, thickness, and tension affect the pitch of its sound.

## During Reading (continued)

### Investigation

### Science Concepts

**pp. 14–15:** Conduct these activities to give children hands-on understanding of how the speed of a vibration affects sound.

Changing the rate of vibration changes the sound.

**pp. 18–19:** Check that children understand that there is a difference between pitch and loudness. Ask: *Can a low sound be loud? Can it be soft?*

Learning science vocabulary is crucial to achieving a greater depth of understanding of scientific concepts.

**pp. 20–22:** To demonstrate the concepts, have a volunteer say something while standing at the front of the classroom, and then repeat by speaking outside the room, through the closed door.

The medium that sound travels through affects the sound's volume and the distance at which it can be heard.

**pp. 24–25:** Explore this concept through simple classroom activities to help children understand that sounds become softer the farther the sounds travel.

Sound waves lose energy as they travel.

**p. 29:** Allow children plenty of time to experiment with their instruments, discovering how they can control the rate of vibration to create different pitches.

Making observations is fundamental to the study of science.

## After Reading

Restate the key ideas in the book. Sound is caused by vibrations that travel in waves. Sound travels through air, water, and solids at different speeds. Pitch is how high or how low a sound is, and is affected by the size, thickness, and tension of the object that is causing vibrations.

### Investigation

### Understanding Science

Encourage children to play their instruments in different rhythms to create music. Allow listeners to clap their hands or tap their feet in time to the rhythms.

Demonstrating scientific knowledge and achievement builds confidence.

Bring in a musical instrument and have children explain how it makes sounds and how the player controls different pitches.

Demonstrating scientific knowledge and achievement builds confidence.