

# SECRET SOUNDS

GRADE LEVEL: 1 | TIME REQUIREMENT: 1-2 HOURS

## INTRODUCTION

This activity allows students to investigate how sounds and vibrations are related. Students learn about waves as mechanical phenomena throughout elementary school, and they connect patterns of motion to waves. Students can start this development as early as kindergarten and further develop the ideas through the first and second grades.

## OBJECTIVE

Students will learn about noisemaking 'crickets' that some soldiers carried to communicate during World War II. Using this as a launch point, they will investigate how sound moves through materials. Thus, they will learn about waves, about conducting their own investigations, and about collaborating to come to a consensus explanation.

## STANDARDS

NGSS DCI PS4  
Wave Properties.

NGSS SEP  
Constructing explanations (for science) and designing solutions (for engineering).

NGSS CCC  
Cause and Effect.

CCSS SL.1.1  
Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

CCSS W.1.7  
Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions).

CCSS MP.5  
Use appropriate tools strategically.

## PERFORMANCE EXPECTATIONS

NGSS 1-PS4-1.  
Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

## HOW TO USE THIS RESOURCE

Read the story about a real WWII situation with students and discuss it with them to ensure their understanding, and then lead them through an investigation about sound waves.

### Materials (per group or station)

- String, cut to a length of 3 feet
- Large metal utensils (the utensils that carry sound waves must be ONLY metal, for example no plastic or wooden handles.) You can use utensils of other materials for comparison.

Have students make predictions before making observations. Have students draw pictures of what they are doing and observing. Have students discuss their ideas and explanations. Record their observations and conclusions for all the class to see and discuss.

### Instructions

1. Cut a piece of string about 3 feet in length.
2. Create a loop in the middle of the string and tighten the loop around one end of a metal spoon or spatula.
3. Wrap both ends of the string around each of your index fingers and hold the string so that the utensil is swinging freely in the air.
4. Swing the utensil so that it knocks against the edge of a desk or table. Ask "What do you hear?"
5. Next, lift the ends of the string to your ears as though you're going to plug your ears. You don't need to shove the string inside your ears, just hold them against your ears.
6. Now, lean forward and swing the utensil against the desk or table again. What did you hear this time? You should have heard something more like a church bell or a gong vibrating through the string by your ear.

For extra experimentation, you could also try this investigation with wood or plastic utensils to see if the same thing happens or if students hear something different.

## To discuss with students

### HOW DO SOUNDS TRAVEL?

What materials carried the sound well? What materials didn't? Sound travels in waves as the particles in air or water or metal vibrate. Things made of wood or rubber or other soft substances tend to absorb the vibrations and not pass them along. Stiff materials like metal pass the vibrations along well.

---

## ADDITIONAL RESOURCES

To accompany this lesson, try this book:

+ *What Makes Different Sounds? I Wonder Why*, by Lawrence Lowery

You can get a replica cricket from the National WWII Museum store here:  
[store.nationalww2museum.org/replica-wwii-clicker-d-day-cricket/](https://store.nationalww2museum.org/replica-wwii-clicker-d-day-cricket/)

**READING****SECRET SOUNDS**

In the middle of the night, 13,000 young men were on board hundreds of planes over France, a country in Europe. It was June 6, 1944, and these men, who were part of the huge effort to free France from enemy Nazi forces, were about to jump out of the planes using parachutes to land on the ground in the dark.

After they landed, the men had to find each other. Because it was in the middle of the night, the men had all landed in different places in the fields and forests of France, and it was hard to meet up. They couldn't use flashlights or call out to each other because enemy soldiers might hear them. Radios back then were big and heavy and not everyone had one. So how could the men find each other safely and quietly?

Some of the men who jumped from the planes were supplied with a small piece of metal called a cricket. When the men pressed down on the cricket, it made a clicking sound. Just as real crickets can use sound to find each other in the dark of night, the soldiers used their crickets and followed the sounds of each other's clicks to signal and to find each other in the darkness.



Parachuting soldiers drop from the air into Holland, September 1944.  
(Image: The National WWII Museum, 2004.311.089.)

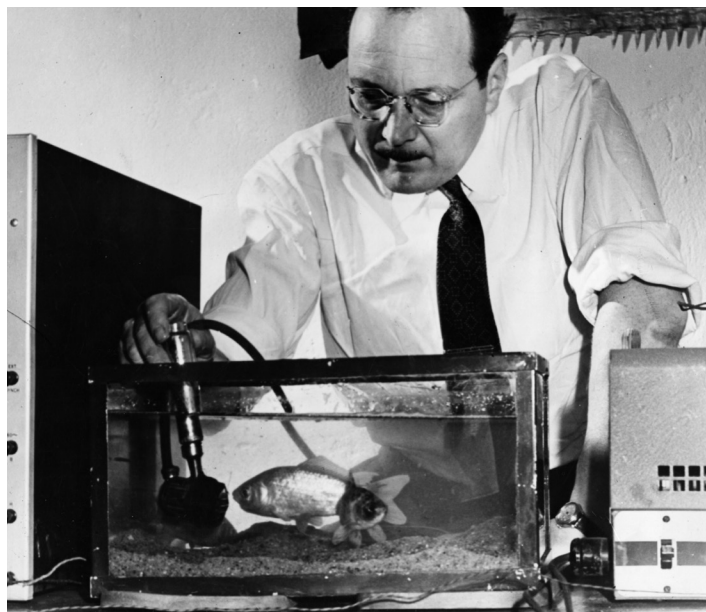
NAME:

DATE:

We just learned about how soldiers during World War II used secret sounds to find each other in enemy territory by using a metal tool called a "cricket." So why does a piece of metal rubbing on another piece of metal make a sound? What carried that sound across the fields and forests in France? How can the type of material used affect the sound and how far it will carry? Let's investigate to find out.



A military band entertains fellow troops on an Air Base in Texas, 1944. (Image: The National WWII Museum, 2009.353.003.)



A scientist demonstrates apparatus to record the underwater sounds of fish, New York, NY, June 1945. (Image: The National WWII Museum, 2012.019.607.)

Your teacher will give you information about how sound is made, and how sound travels. You will investigate these ideas using different materials and methods of making and receiving sound waves.

Follow the instructions. Be careful with the materials. Before you make observations, say or write down what you think will happen. Draw pictures of what you see. After the activity, decide if your predictions were correct or incorrect. Discuss with your classmates what is happening and try to explain it out loud or written down.