

# LEARN ABOUT SOUND

With Les Paul

## What is Sound?

## Who was Les Paul?

Les Paul was a famous guitar player who grew up in Waukesha. He loved music and playing the guitar. As a kid, Les was always tinkering with devices and machines to learn how they worked and how to improve them. This curiosity led him to invent new guitars and innovate new recording techniques. And it all started by learning about sound.



Images courtesy of Les Paul Foundation

## Time To Learn

### What is sound?

Sound is vibrations that travel in waves. When these vibrations reach our ears, the drum inside our ears vibrates. This is translated into signals and sent to our brains as sounds.

### Try this!

Close your mouth and start humming. Softly feel your lips with your fingers. They are vibrating.

You have made your own guitar!

Time To Explore:

Tighten and loosen your strings to change how they sound.

Try opening the lid and then strumming the strings. Is it louder or softer?

Fill the box with something and see if it changes the sound. You can put in Legos, wadded paper, cotton balls, even dirty socks!

Keep track of which ones are loud and soft, high or low, pleasant or noisy and write them in the chart below:

Item I put in the guitar

How it sounded

Item I put in the guitar	How it sounded

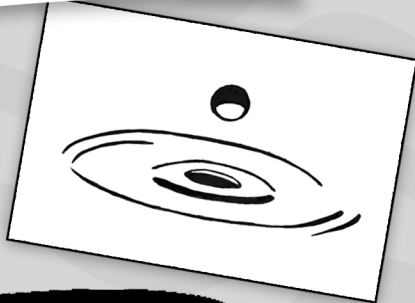


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## Sound travels in waves

Think of the waves created when you drop a rock into a puddle. Waves spread out from where you dropped the rock.



### Fun Fact:

Sound has to travel through something. Outer space is mostly empty so sound waves cannot travel through space!

Each string on a guitar creates its own sound wave. Strumming strings produces many sounds at once. Music is made from groups of sounds put together.

Some guitars are hollow, like a box, and have an open hole right under the strings. The sound waves go into the hole, bounce around, and come out louder. Different strings produce different sounds. The tighter and thinner the string, the higher the sound.



Let's build our own guitar like Les. He often built things out of items he found in his house, so our guitar is going to be made from a box.

## Time To Make



Tools: scissors, pencil, tape



1. Empty items from smaller box. Use it to make the guitar.

2. Cut out circle template.

3. Open box lid and flip box so lid is flat on table top. Trace circle template onto top of box in center. Using scissors or sharp pencil, poke hole in center of circle and cut it out.

4. Use pencil or scissors to poke 4 or 5 holes in a line on either side of the opening. One side should have the holes spaced 1 inch from the opening. (for the paper plate to slide under)

5. Insert a brad into each hole. Open the ends of each brad. These hold your strings, don't open them too tight against box.

6. Cut rubber band so they are open. Loop one end around each brad. Not too tight at first so they don't break.

7. Close lid and tape shut. Roll up paper plate and slide under strings on side where are brads are farther away from hole.

8. Strum the bands. Tighten bands till you have desired sound.