You have made your own recording!

Time To Explore:

Why do we need a speaker? Drag your second toothpick along your recording without the cone. Your fingers feel the vibrations but do you hear them very well? Try the toothpick with the speaker cone again. What changed?

The speaker, which is what the cone is sometimes called, makes the vibrations louder so we can hear them better.

Hold the cone in different ways to see how it changes the sound. What happens when you hold onto the top of the toothpick? What happens when you hold onto its sides?

Compare your track with a friend, or combine your track with a friends.

The London Sound Academy has a video of needle moving along a track or groove of a record. Check it out!
https://www.londonsoundacademy.com/blog/how-does-vinyl-work

Produced by the Waukesha County Historical Society and Museum with funding from The Les Paul Foundation

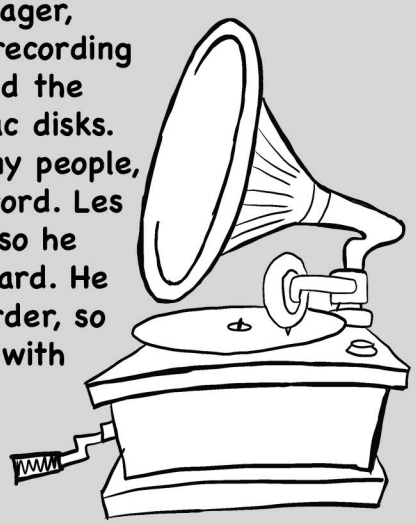
The Waukesha County Historical Society and Museum presents...

LEARN ABOUT SOUND With Les Paul

Recording Sound

Les Paul - the inventor

By the time Les Paul was a teenager, there were many inventions for recording and playing music. One was called the phonograph that used flat, shellac disks. Phonographs were owned by many people, but they could only play, not record. Les wanted to record his own music so he could hear what his audience heard. He didn't have money to buy a recorder, so he figured out how to build one with things he could find.



Time To Learn

How does sound travel?

Sound is a vibration that travels through the air in waves but vibrations can travel through solid things too, like water or wood.

Try this!

Tap a pencil on a table. When the end hits the table, it makes vibrations. These travel to the other end of the pencil where you are holding it and you can feel them.

Think About It

Because vibrations travel in waves, they can be moved from one thing to another. You can transfer vibrations from your throat to the air, and from the air to another person's ear.

Fact:
We could not hear if sound in the air couldn't be transferred to our ear drum.

Device Detail:
Cup and string 'telephones' transfer sound waves from the air, to the cup, to the string. The string carries the vibrations to another cup, and then to the air where the second person hears it.

Recording Sound

Some devices have a sharp needle that scratches a track onto a surface. This track mirrors the vibrations in the air that are being transferred to the needle. When a dull needle is run over the track, it vibrates. The vibrations are the same as when the first needle made the scratches. This is how sound can be recorded.

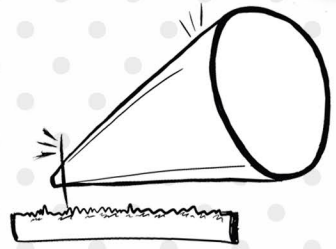
Playing Sound from a Recording

We can't hear the sound unless the vibrations are transferred back into the air. That is what the speaker does.

Let's create our own sound recording like Les.

Time To Make

Tools: scissors, pencil, tape



1. Cut out speaker pattern and tape sides together to form a cone.

2. Carefully insert toothpick through narrow ends (through both sides) without smashing the end flat.

3. Take clay and roll to make a thick snake. Do this on the paper plate to make sure no dirt gets on it.

4. Use popsicle stick to make notches in the top. Space them out, make some shallow and some deep.

5. The notches are just like the grooves or tracks that record sound.

6. Holding the cone at the top of the big opening with two fingers, drag end of toothpick along the grooves. Notice how it sounds

7. Roll your clay to smooth out the notches and make a different pattern. Listen to it as well and see what changed.

Concept:
Sound is produced when these vibrations travel up the needle and are transferred into the air, making the air vibrate.