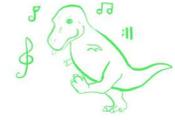


Science at Home: Sound



Want to play more with sound? Here are some activities you can do at home!

String Telephone

Talk to a friend on a string telephone!

What You Need

- Two large disposable cups
- Two paperclips or toothpicks
- 10- to 30-foot-long length of string
- A sharp tool (scissors, knife, nail, etc.)
- Two people
- A quiet area



Procedure

1. Punch a hole in the center of the bottom of each cup with your sharp tool. (Have an adult help you!)
2. Thread one end of the string through the bottom of each cup.
3. Inside the cup, tie the end of the string to the paperclip or toothpick. (This is so the string does not come detached from the cup.)
4. Have each person take a cup and walk apart until the string is taut.
5. Put the cup over your ear while your partner talks. Don't whisper, but try not to be too loud if you're close to each other.
6. Take turns talking into your cups! How well can you hear each other?

Why? The vibrations of your voice are sound waves, and they travel through the string to the other end of the cup!

Experiment!

- What happens if you talk at different volumes?
- What happens if the string goes slack?
- Do different types of cups (e.g. plastic vs paper) work better? What about different types of string?

Did You Know?

You can create a speaker for your phone with just a cup! Play music on your phone, and then put the phone speaker-down into the cup. Your phone should sound louder to your ears!

Why? Sound waves move away from an object in all directions. By placing the phone in your cup, you are forcing the sound waves to move in one direction (up). More sound waves equals louder sound! What else do you know that uses this idea to direct sound?



Cardboard Tube Kazoo

Make some music with a homemade kazoo!

What You Need

- Paper towel tube
- Rubber band
- Any paper or plastic film
- Scissors



Procedure

1. Cut the film into a square just a bit bigger than the diameter of the tube. Use the rubber band to attach it the film tautly to one end.
2. Poke a hole in the tube close to the end with the film.
3. Hum into the hole and make some music! Can you feel the film vibrate?

Why? The sound waves of your voice bounce off the film and make it vibrate!

Experiment!

- What happens if you cover the open end with your hand?
- Do different types of film vibrate more or less?
- Does the sound change if you use a paper towel vs. a toilet paper tube?

Spoon Chime

Listen to the sound of a spoon chiming!

What You Need

- Metal spoon
- 2 feet of string



Procedure

1. Tie the string into a slip knot at the point where the handle meets the scoop. The spoon should be in the middle of the string, with equal lengths of string on either side.
2. Hold each end of the string in a hand, and swing the spoon against a hard surface. What does it sound like?
3. Now bring your hands, still holding the string, up to your ears. Touch your fingers to the outside or just inside of your ear, and swing the spoon against a hard surface. How does the sound change?

Why? Sound waves vibrate differently through different materials. When the spoon chimes on its own, the waves vibrate the air, which then hits our ears. When the spoon is attached to a string, the sound waves vibrate the string itself, which hits our ears differently. What else do you know that uses vibrating strings to make sound?

Experiment!

- Do different types of string change how the spoon sounds?
- Do different size spoons sound different?
- What happens if you don't use string and hold the vibrating spoon close to your ear?