

# String Telephone

Grade Level: 2, 3, 4, 5

Duration: 35-50

Classification: Classroom, STEM Spark

Subject(s): Engineering, Physics, Anatomy

Categories (STEM): Science, Engineering

Keywords: Sounds, Waves, Ear, Telephone

## Introduction

- Summary: Students will experiment with a string telephone to learn about how sound travels.
- Description: Students will create and experiment with their own string telephone and learn about how sound travels through waves.

## Online Resource:

[https://www.teachengineering.org/activities/view/cub\\_sound\\_lesson02\\_activity1](https://www.teachengineering.org/activities/view/cub_sound_lesson02_activity1)

## Vocabulary

- **Sound Waves:** vibrations through air that allow sound the travel

## Materials

Materials	Quantity	Reusable?
Paper Cups	1 per Student	No
String	25 ft/ 2 Students	No
Sharpened Pencils	1 per 2 Students	Yes
Yardstick	1 per Classroom	Yes
Student Guide	1 per 2 Students	No

## Directions

- Have the students get into pairs and hand each pair a Student Guide to write down their predictions for each test. Have them mention how loud and clear the sound is through their cup phone.
- Have each group take 2 paper cups and poke a small hole through the center of the bottom. **Make sure the hole isn't too big.**
- Poke the end of the 3 ft string through one of the cups and tie a knot on the inside the cup.
- Poke the other end of the string through the hole on the other cup and tie a knot so it will not pull through the cup.
- Have one student hold the cup to their mouth and take a little loud into it and have their partner hold the other cup to their ear.

- Write down their observations on their Student Guide.
- Repeat this process with the other specifications on the Student Guide:
  - String loose between cups
  - String tight between cups
  - String length 3 ft
  - String length 10 ft

### Activity Extension

- Have pairs create their own tests for the group to complete. (Ex: hold the cup with their hands while they talk, different length string, string under a doorway etc.)
- Have the students sit down for a couple minutes and have them write down what all they hear. Go outside if you can.

### Discussion Questions

- What test worked the best, tight or loose? **Tight - when the string is loose it is softer and tends to absorb more sound than the tight one.**
- How does the telephone work? **When you speak into the cup, the back of the cup vibrates and continues into the string. The sound waves/vibration travel through the string.**
- What happens when the vibrations/sound waves reach the other end of the cup? **The waves in the string vibrate the cup and disturb the air. Those vibrations are sound waves traveling toward our ears.**
- Which state does sound travel through best: solid, liquid, or gas? **Solid – sound travels best through materials like metal.**

### What is happening?

- When sound travels through a solid, it travels the same way as it does through air: in a sound wave. The sound wave actually moves the tiny particles, or molecules, that make up the solid. We now know from experience that these sound waves sound louder when we hear them through solids.

### Applications:

- Majors - Engineering, Physics
- Jobs - Sound Engineers, Physicians
- Hobbies - Listening to music, playing music, singing
- Real-World applications - Ultrasonic waves are used in the medical field, Sonar waves are used to detect objects in water, Bats use echolocation to navigate in the dark



PROGRAM FOR WOMEN  
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This activity was last updated in fall 2020 by Student Role Models.