

A Very Old-School Telephone

Every sound is made when something vibrates. Sometimes it's the skin stretched across a drum, sometimes it's a plucked string. By fine-tuning the amount of what is vibrated, you can make notes.

At this station you'll make a full octave of eight notes.

Procedure

1. You and your partner each take a cup. Walk away from each other until the string is taut (tight from one cup to the other).
2. Take turns speaking softly into the cup while the other partner listens. Tip: put the cup over one ear and your hand over the other. You may hear the transmitted sound better and isolate it more clearly from sound in the room.
3. Be sure to keep the string taut (tight) while you are using your old school phone. Have one partner speak into the cup, while the second partner listens. Touch the string at different points along it, and notice how this pressure affects the sound. Move closer to each other to make the string loosen, and walk slightly farther apart to tighten the string. (But not so tight the knots fly out!) Record your observations for these different conditions in your lab notebook.
4. Switch roles: the partner who spoke into the cup now listens to the other partner.
5. Finally, both partners listen while one partner runs a finger along the string.



Turn and Talk

Think about it. How does this station work? Discuss these questions with a partner.

Describe the series of different materials that vibrated to make the telephone carry sound.

Which medium conducted sound more effectively- the air in the room or the cups and string? Why?

When you speak into the cup, what type of wave are you creating?

What is the medium that is transmitting the sound wave from your mouth to the bottom of the cup?

What do you think happens when the sound waves reach the bottom of the cup?

How does the sound of your voice travel from your cup to your partner's cup?

What happens when the sound waves reach your partner's cup?