Name: _____ Date: _____

MAKING A MODEL OF THE EAR

with Paper Cups and String

In this activity, you will build a simple model of the ear to see how sound travels to the brain.

QUESTION

How does sound travel to the brain?

MATERIALS

- 2 paper cups
- String (about 10–15 feet)
- Paper clip or pencil
- Tape
- Scissors (optional)
- Partner

WHAT TO DO

1. Poke a small hole in the bottom of each paper cup.
2. Cut the string (if needed) so it is long enough to reach from one person's ear to another.
3. Push one end of the string through the hole in one cup and tie a knot to keep it from pulling out.
4. Do the same with the other end of the string and the second cup.
5. One person holds a cup to their ear.
6. The other person speaks into their cup.
7. Listen! You should be able to hear the sound through the string.

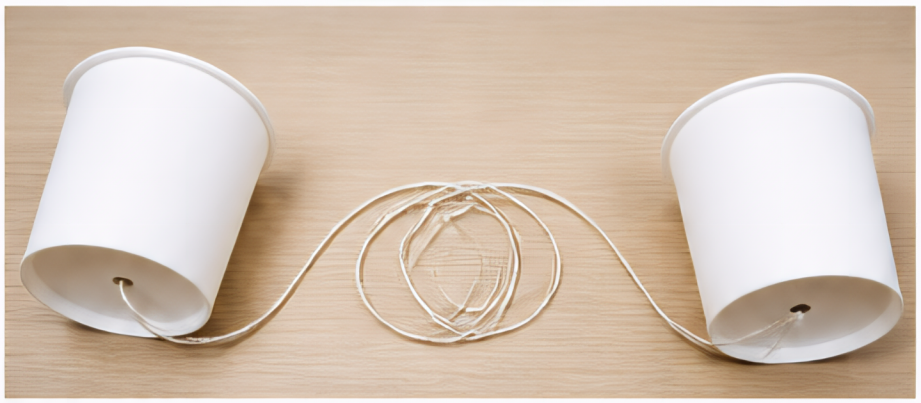
CHALLENGE!

Try using a longer string. What happens to the sound?

_____

_____

THE MODEL



In this model:

- The cup you speak into is like your mouth (sound source).
- The string is like the path sound travels.
- The cup at the other end is like the ear that receives sound.

The string carries the sound vibrations from one cup to the other.

HOW IT WORKS

When you speak into the cup, your voice makes the bottom of the cup vibrate. The vibrations travel along the string to the other cup. The string helps the vibrations move from the speaker to the listener, so you can hear the sound.

This is similar to how your ear works. Your outer ear collects sound, the middle ear passes the vibrations along, and the inner ear sends signals to your brain.

THINK ABOUT IT

1. Why does the string need to be tight to hear better? _____

_____

2. What happens if the string is loose? _____

_____

3. How is this model similar to the real ear? _____

_____

4. What are some things this model does NOT show? _____

_____

BONUS: Try different cups (plastic, metal, or different sizes). How does it change the sound?

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