

String Telephone

National Capital

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SUMMARY

Project Objective	Learn how sound waves move through a medium by making a simple telephone.
Project Supplies	• 2 plastic drinking cups (with small holes punched in the bottom) • Kite string (about 6 feet long) • 2 paperclips

Introduction:

Have you ever wanted to talk to someone without using a phone or shouting? In this activity, you'll make a simple cup-and-string telephone that can send your voice across a distance! By building this classic science tool, you'll explore how sound waves move from one place to another. All you need are two cups, some string, and a partner. Get ready to build your own communication system and discover how your voice can travel along a tiny piece of string!

Instructions:

1. Prepare the cups:
 - a. Take the two cups and make sure each has a small hole in the bottom.
2. Attach the string:
 - a. Thread one end of the string through the hole in the first cup and tie it to a paperclip inside the cup (this keeps the string from pulling out).
 - b. Do the same with the other end of the string and the second cup.
3. Test your telephone:
 - a. Stand apart so the string is stretched tight (not sagging).
 - b. One person talks into a cup while the other listens at the other cup.
 - c. You should be able to hear their voice coming through from the other end!

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More:

If you have extra time, try experimenting with different materials to see which ones carry sound the best. You can test various types of string—like yarn, fishing line, or ribbon—and different kinds of cups, such as paper, plastic, or metal, to compare how clearly each one transmits your voice.

You can also take your telephone outside and try much longer string lengths to see how distance affects the sound. As you test each change, pay attention to how tight the string is and how clearly you can hear. By exploring different combinations, you can discover which setup makes the strongest and clearest cup-and-string telephone.

What's Happening?

When you speak into the cup, your voice makes the bottom of the cup vibrate. Those vibrations travel into the string and move along it—kind of like a ripple moving down a rope. When the string is tight, the vibrations travel smoothly all the way to the second cup. There, the vibrations make the bottom of that cup move too. Your partner's ear turns those vibrations back into sound, so they hear your voice!

If the string is loose, too long, or made of a material that doesn't carry vibrations well, the sound becomes weaker. Changing the cup or string material can also change how clearly the sound travels. By experimenting, you're learning how sound waves move through different materials and why some work better than others!