STEM Program

String Telephones

Sound Waves - How Do We Hear?

Explore how sound waves travel by building a string telephone. Challenge your communication skills and test just how well you can communicate using your string telephone.

Suited to Section

Joey Scouts | Cub Scouts | Scouts | Venturer Scouts | Rover Scouts

Challenge Area

COMMUNITY | PERSONAL GROWTH | OUTDOORS | CREATIVE

Key SPICES Growth

SOCIAL | PHYSICAL | INTELLECTUAL | CHARACTER | EMOTIONAL | SPIRITUAL

Likely Scout Method Elements

COMMUNITY INVOLVEMENT | LEARNING BY DOING | NATURE AND THE OUTDOORS | PATROL SYSTEM

PERSONAL PROGRESSION | PROMISE AND LAW | SYMBOLIC FRAMEWORK | YOUTH LEADING, ADULTS SUPPORTING

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Plan

1. Investigate sound and how it travels. Try model sound waves using a slinky to visualize how sound travels from one space to another. Play some loud music and either place your hand on the speaker, or feel the floor or table around you, what do you notice? You can also try placing your hand on your throat and making a long ‘ahh’ sound, what do you feel?
2. Collect the materials required for the activity. Communicate with your patrol and leaders if you need to bring items from home.
3. Read the safety requirements and discuss with you leaders/adults supervisors what supervision and safety requirements might be needed.

Do

1. Punch small holes in the bottom of two paper cups. You may need to use scissors, a sharp pencil, or a nail.
2. Thread a piece of string through the hole and tie the end on the inside to a paperclip so it doesn’t slip out of the cup. Cut your string, and do the same to the other end.
3. Test out your string phone and call a friend! Get in position so the string is tight. Speak into the cup while your friend on the other end holds the phone to their ear to listen. Try to have a conversation!
4. See how far you can make your string phones reach. Experiment with different lengths of string.
5. Experiment with your cup phones. What happens if the string is loose? What happens if you place your hand on the string while using the phone?
6. Test your string phones with some communication games. Try sending a secret message on the string phone through your whole unit, passing the message along to each other one at a time. Did the secret message make it through the whole unit?

Review

1. How does the string phone work? How did the sound travel along the string to your cup?
2. What have you learnt about sound during this activity?
3. Do real telephones work the same way? What is the same, what is different?
4. If you were to do this activity again, what would you do the same? What would you do differently? What did you enjoy most about this activity?

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Variations

- Once you've mastered one-to-one communication, can you jump on a conference call? See if you can build a string phone line that allows more than 2 people to communicate together.
- What else can you use to build your string phone? Test different types of strings and cups. How do different materials affect the string phone?
- A larger program can be built using other 'How Do We Hear' or sound wave challenge cards.
- Explore telephones and how they work. Who invented the telephone? How have telephones changed over history? How do we use telephones today? Why is the telephone an important form of communication?

Safety Tips

- Sharps warning: You may need to use scissors or other sharp objects during this challenge card, posing a risk for cuts. Ensure younger sections are appropriately supervised.

Why Does This Happen?

For help understanding how your string phone works visit: https://www.scientificamerican.com/article/talk-through-a-string-telephone-bring-science-home/ Sounds travel as a wave, which we can't see, we can feel as vibrations. When you speak into your cup the sound waves make the cup, and string start to vibrate, or shake. The vibrations then made their way along the string to the other cup where the vibrations fill the cup and can be heard as sound. This is why the string has to be tight, if the string is too loose the vibrations can't travel as well and get lost. Think about jingling a loose rubber band compared to the twang when the rubber band is tight.

SciScouts Physics of Waves

The SciScouts Physics of Waves is a National Science Week project, undertaken in collaboration with Fizzics Education. These instructions were prepared by Scouts for Scouts. This National Science Week project is supported by the Australian Government.

Scouting has always been strong on STEM skills. Maths to calculate catering quantities and navigate, the science of water purification, the physics of abseiling, and the engineering of pioneering structures – they all have their place. In the current program for our youth members, STEM and Innovation forms one of six Special Interest Areas that enable Scouts to set goals and pursue their own ideas.

SciScouts PHYSICS

Fizzics Education Since 2004 Innovative Science Shows & Workshops!

national science week 2022

An Australian Government Initiative

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