



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

Learn about some inventors and their inventions. Focus on Henry Sampson's invention of the cell phone. This activity can be done alone but requires two people when testing your device.



Supplies Required:

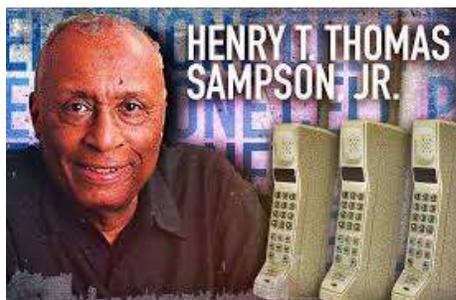
- 2 paper or plastic cups
- Tape
- Sharpened pencil or Scissors
- Long piece of string
- An adult to help

Video

Listen to [Have You Thanked an Inventor Today?](https://tinyurl.com/yacnluef) before you start the activity: <https://tinyurl.com/yacnluef>
How does a string phone work? <https://tinyurl.com/ycvjf3q>

Overview

Most of the time, inventions are created because of a need. Inventors create things or ideas to make our lives easier. In this activity you will design a telephone system to communicate with others. From the story, [Have You Thanked an Inventor Today?](#), we learn that Dr. Henry Sampson invented the gamma electrical cell phone! A gamma electrical cell is a device that produces a high voltage from radiation sources. Radio waves are transmitted to receive audio signals. While you design your string phone, you'll also explore sound—a type of energy that is created when something vibrates. The science of sound is all about the energy caused by vibrations and sound waves. Speaking into the cup creates sound waves which are converted into vibrations at the bottom of the cup. The vibrations travel along the string and are converted back into sound waves at the other end, so your family member or friend can hear what you said!



Instructions

1. Cut a long piece of string.
2. Ask an older sibling or adult to help you poke a hole in the bottom of each cup, using a pencil or scissors.
3. Thread the string through each cup and tie knots at each end to stop it from pulling through the cup. You can also add a piece of tape to hold the strings in place.
4. Make sure the cups are facing away from each other.
5. Now give one cup to a sister, brother, cousin or friend and take the other cup for yourself.
6. Walk away from each other slowly.
7. The string should be in a straight line and tight as shown in the video. This is very important!
8. Tell the other person to put their cup over their ear while you talk into your cup.
9. Can you hear each other?
10. Can you explain what is happening?
11. Sound travels through the air but it travels even better through solids, such as your cup and string!

Additional Resources

Think About It! Why are inventions important? Why is it important to understand that sound can travel? Imagine a life without phones, how would it look? Would it be better or worse? Explain your thinking.

1. Check out some cool kid inventions: <https://tinyurl.com/yapyk5r5>
2. Learn more about sound waves: <https://tinyurl.com/jmzhhbma>
3. Fun telephone facts: <https://tinyurl.com/yacqwb7r>

Share It Out

Take a photo of your design. Then create a video talking about the advancement in technology, how we can not only talk on our cell phones now but we have the ability to watch videos and more! Don't forget to talk about sound waves! **Share with others on social media:**

Use the hashtags:

#StringPhoneReadAlong
#ProjectExploration
#StemAtHome

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 116. Learn more at www.projectexploration.org/explore-store

Join PE's character contest!

Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at: www.projectexploration.org/character-contest.



Call or text us for help: 312-772-6634

www.projectexploration.org