



Screaming Cup

Make some spooky sounds with just a cup, yarn, paperclip, and water. Harness the power of friction to scare your family and friends!

TEKS:

SCI 3.6 A: The student is expected to explore different forms of energy, including mechanical, light, sound, and thermal in everyday life.

SCI 4.6 A: The student is expected to differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal.

SCI 4.6 D: The student is expected to design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.

Materials:

- Disposable cup
- Paperclip or bead
- Pen or pencil
- 18-inch piece of yarn
- Water

Experiment/How-To:

1. Use a pen or pencil to poke a small hole in the bottom of the disposable cup.
2. Tie a paperclip or bead to one end of the 18-inch piece of yarn.
3. Thread the opposite end of the yarn through the hole in the cup. The paperclip/bead should be inside the cup so the long part of the yarn hangs outside.
4. Dip the yarn in water.
5. Holding the cup in one hand, pinch the yarn between your thumb and index finger. Squeeze tight as you slide your thumb and index finger down the yarn.

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6. Enjoy showing your family and friends this creepy noise!

STEM Connection:

Sound moves in waves that travel *fast* through the air—around 1,126 feet per second! Sound waves are produced when air molecules vibrate. These waves of vibrating air molecules can be picked up by our ears. Our ears then work to turn these vibrations into sounds that our brains can understand.

As you moved your fingers down the yarn, you probably felt the yarn vibrate. This vibration then traveled up the yarn and into the cup. The cup caused the vibrations to become sound waves that your ears could hear! Adding water to the yarn caused it to be “stickier,” or to have more friction with your finger. This resulted in more vibrations and increased the amount of sound that you were able to hear. Could you modify your screaming cup to make a different sound? What happens if you use a liquid other than water on the yarn? Does the sound get louder if you use a larger cup? Or, does the pitch of the sound change if you use a piece of yarn that is longer or shorter?

Career:

Acousticians use physics to study the vibrations that create sound. This knowledge and study is used to do a wide variety of things, from designing concert halls and music recording studios to studying whales. Acousticians can be found working in all sorts of environments, with all kinds of people.

Resources:

<https://www.stevespanglerscience.com/lab/experiments/halloween-screaming-cup/>

<http://scactivities.cikeys.com/screaming-cup/for-teachers/>

https://www.ducksters.com/science/hearing_and_the_ear.php

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