

STEAM NIGHT - *SCIENCE ACTIVITY 2*

Sound – Invisible Waves

ACTIVITY OVERVIEW:

Students will make their own “gong” using a spoon and string and then experience and experiment with sound as a wave.

WHAT DOES THIS SCIENCE ACTIVITY HELP US LEARN?

Many people may not realize that when a noise is made, it creates sound waves which travel through the air to our ears, where those waves are translated by our brain into sound. But sound waves can travel through substances other than air, which can greatly affect the sound we hear. Think about sounds you may have heard underwater (while in a pool for example) or what happens when you put in earbuds but haven’t turned on the music yet. Even the same action, hitting the spoon with a ruler, will “sound” very different depending on whether those sound waves reach your ears via the string attached to the spoon or through the air. The fundamental principle of sound as a wave is explored in greater depth and detail throughout elementary and middle school science classes.



NGSS Standard: 1 – PS4 – 1

Grade Levels: 1 - 8

MATERIALS (per person):

1 Ruler (wooden or hard plastic)

2 Spoons (metal, should be different sizes, like a teaspoon and a serving spoon)

4 ft. long piece of string

STEP-BY-STEP INSTRUCTIONS:

1. Take the string and tie it around the handle of the spoon so that the spoon is in the middle of the string and you have two approximately equal lengths of string on each side of the spoon.
2. Wrap the ends of the string around the pointer fingers of each hand. Once or twice around is enough.
3. Now push the string against each ear with your pointer fingers, but do not push it into your ear. The spoon should be hanging in front of you, close to waist high.
4. Lean over slightly so that the spoon is hanging from the string and not touching your body and make sure that the string is only touching at your ears where you are holding it in place.
5. Have a friend lightly tap the spoon with the ruler.
6. Now you can experiment! What happens if someone hits the spoon harder? Or if the strings are shorter?
7. Untie your string and repeat the experiment with the other spoon. What's different?

HOW CAN I DO THIS AT HOME WITH MY CHILD?

Students can easily perform this lab activity at home to test different kinds of string, lengths of string, and different metal objects. Try forks, metal coat hangers, and other common metal household objects.

ADDITIONAL RESOURCES:

<http://www.nextgenscience.org/>

<http://static.lawrencehallofscience.org/kidsite/>

<https://www.exploratorium.edu/>

Adapted from: <http://www.kcedventures.com/blog/the-science-of-sound-waves-an-awesome-experiment-for-kids>