



Sound Sandwich

Create your own musical instrument using tongue depressors, rubber bands, and a straw to explore how sound is created by vibrations. Sound moves in waves, and different sized waves produce different pitches of sound. Experiment with your Sound Sandwich to find the perfect tune to play for your 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 5.6 A: The student is expected to explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy

Materials:

- Scissors
- 2 small rubber bands (size #32)
- Straw (biodegradable)
- 2 tongue depressors
- Wide rubber band (size #64)

How To:

1. Stretch and secure a wide rubber band lengthwise over one tongue depressor.
2. Cut two small pieces of straw, about 1 to 1½ inches in length each.
3. Tuck one piece of straw under the rubber band, about 1 inch from the end of the tongue depressor. Set the other piece of straw on top of the rubber band about 1 inch from the other end of the tongue depressor. The length of each straw should be perpendicular to the long axis of the tongue depressor and rubber band.
4. Place another tongue depressor on top of the straws.
5. Wrap a small rubber band around both of the tongue depressors on one end of the "sandwich" to hold them in place. Use another small rubber band to hold the other ends of the tongue depressors in place. There should be a small space between the two tongue depressors created by the straw pieces.

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6. Hold your Sound Sandwich up to your mouth and blow through the space between the tongue depressors and straw pieces. What happens? What does it feel like?
7. What happens if you move the straws closer together or farther apart and blow through the sandwich again? Does anything change?



<https://www.exploratorium.edu/snacks/sound-sandwich>

STEM Explanation:

Sound is produced when a vibration is transmitted through a solid, liquid, or gas. When you blow through the Sound Sandwich, you should feel it vibrating against your lips. The air that you blew between the tongue depressors caused the rubber band to vibrate between the two depressors, and that vibration produced a sound. Sound moves in waves, and different sized waves produce different sounds. Longer sound waves produce lower pitches; shorter sound waves produce higher pitches. When you moved the straws closer together, a shorter part of the rubber band vibrated to produce shorter sound waves and a higher pitched sound. When you moved the straws farther apart, a longer part of the rubber band vibrated to produce longer sound waves and a lower pitched sound.

Career Connection:

Acoustical engineers deal with the science of sound and vibrations. They look for ways to limit unwanted sound and maximize desired sound. Acoustical engineers are an important part of the music industry.

Resource:

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