



Sound Sandwich

Create your own musical instrument using tongue depressors, rubber bands, and a straw to explore how sound is caused 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:

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

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

Materials:

- 2 small rubber bands
- 1 straw
- 2 tongue depressors
- 1 wide rubber band

How To:

1. Place a wide rubber band lengthwise over one tongue depressor.
2. Cut off two small pieces of straw about 1 to 1½ inches in length each.
3. Tuck one piece of straw under the rubber band, about an inch from the end of the tongue depressor. Set the other piece of straw on top of the rubber band about an 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 end of the tongue depressors in place. There should be a small space between the two tongue depressors created by the straw pieces.
6. Hold your Sound Sandwich up to your mouth and blow through the spaces between the tongue depressors. What happens? What does it feel like?
7. What happens if you move the straws closer together and blow through the sandwich again? Does anything change?

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STEM Explanation:

When you blow through the Sound Sandwich, you should feel it vibrating against your lips. Sound is produced when a vibration is transmitted through a solid, liquid, or gas. 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. This is why the Sound Sandwich produced a higher pitched sound when you moved the straws closer together.

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:

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

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