Explore More

Now that students have some understanding of sound and how it travels through different mediums, these investigations will help student apply those concepts to how the human body makes and hears sounds. Each model includes a video to show before the activity.

Model Vocal Cords

Students will build a model of vocal chords that demonstrates how they work. They will investigate how to make different pitches and volumes of sound.

Video: Vocal Cords by Operation Ouch (3:34 minutes)

Materials per station

- Plastic or glass cups of various sizes
- Straw (cut in half works best)
- Rubber bands of various sizes and thicknesses

For a more complex model of the voice box, check out this activity from the Institute of Physics.

Model Eardrum

Students will create a model of the eardrum to see how sound causes vibrations in the ear. They will investigate the effect of different pitches and volumes of sound on the eardrum.

Video: How the Human Ear Works by the World Science Festival (3:13 minutes)

Materials per station

- Plastic bottle or cup
- Scissors
- Balloon, plastic wrap and/or plastic bag
- Rubber band
- Salt, sugar, dry ground coffee or some other sand-like substance
- Smart phone with ear buds/phones or a small Bluetooth speaker
- (Optional) App for playing specific frequencies or tones

For a more complex model of the ear, check out this activity from Sciencing.

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Sharing Results

After students have made both models and answered the questions, place them in small groups to share their drawings of the ear and vocal cords. You may want to review those specific parts of each video that show diagrams of the ear and vocal cords. Allow students to fill in missing parts and make sure their drawings are complete so they have something to study for the final evaluation.

As a class, discuss the question "*Do we need an eardrum to hear? How else can vibrations get to the cochlea?*" Remind them of the Head Harp investigation as well as how elephants can hear through their feet. Some students might also be familiar with cochlear implants, which sends electrical signals directly to the nerves in the cochlea instead of via vibrations.

Finally, allow students to take the High Frequency Hearing Test using this video from Brain Games to see how well their cochlea is holding up. Make sure you and any other adults in the classroom participate as well

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