

Explore Investigations

These three investigations allow students to explore how sound waves travel with different materials including their own head. After the activities the students will share their observations and discuss any discrepancies in their answers.

Investigations

Hanger Gong

Students will listen to a hanger tapping on the table as the sound travels through air and through a solid string to compare the sounds and hypothesize why they are different.

Materials per station

- Metal hanger (or a metal utensil)
- 3-foot length of string
- (Optional) other objects and types of string to experiment with

Balloon Amplifier

Students will explore the amplifying properties of a balloon filled with different gases and a liquid.

Materials per station

- Balloon full of air
- Balloon full of water
- Balloon full of carbon dioxide (use dry ice or yeast with sugar water in a bottle or beaker to inflate the balloon)
- (Optional) Balloons with other gases (helium) and/or liquids (oil, corn syrup)

Head Harp

Students will explore how sounds travel through the bones in their head along with the affect of tension on the pitch of the sound of a vibrating string. Adapted from [this Exploratorium Snack](#).

Materials per station

- 3-foot length of string tied into a giant loop
- Ear plugs or noise cancelling headphones

Sharing Results

After all students and/or groups have completed the investigations, allow the students to share their results and observations. Students should discuss and answer the following questions:

- Based on your observations of the hanger gong, why do you think the sound heard through the string had a different pitch and length than the sound heard through the air?
- How do sounds heard through a gas filled balloon compare to hearing with no balloon?
- How do sounds heard through a gas filled balloon compare to sounds heard through a water-filled balloon?
- How do sounds heard with your ears compare to sounds heard through your bones?
- Do you need ears to hear?
- What questions do you have about sound after these explorations?