



Children's Museum of Houston

Pre/Post Classroom Activities

Hearing Sound

Rationale

How Does It Work brings physical science to life through exploration of everyday phenomena by investigating sound waves. Questions can be posed and answered through investigations in this exhibit. Children learn that methods, models, and conclusions built from these investigations can change as new observations are made.

TEKS Objectives (Science)

- 1.1A: Demonstrate safe practices during field and laboratory investigations.
- 1.2: The student develops abilities necessary to do scientific inquiry in the field and the classroom.
- 1.7A: Observe, measure, and record changes in... sound and movement.

Background

Certain sounds are described as high, such as those produced by a violin, or low, such as those produced by a tuba. A description of a sound as high or low is known as the pitch. The pitch of a sound depends on the number of waves produced in a given time. In this lesson plan, children begin to understand that sound travels in waves, is created by vibrations, and can create different pitches. Children will later be able to further explore concepts of sound waves in their visit to the *How Does It Work* exhibit.

Vocabulary

Sound waves
Pitch
High pitch
Low pitch
Instruments

Materials

- Plastic bottles for each student
- Pitcher of water

Procedure

Set Up: After an introduction in how sound travels in waves discuss high and low pitch. Set up various stations with the materials listed above.

1. Children will pour some water into the plastic bottle until it is half full (You can draw a line on the bottles to demonstrate the halfway point).
2. Ask children to blow across the top of the bottle to make a sound.

3. Ask children to put more water into the bottle, and then blow across the top of the bottle again. Did the sound change? Discuss high and low pitches and share examples.
4. Ask children to pour their water back into the pitchers.
5. Then group children into groups of 5-6.
6. Ask children to pour different amounts of water in each of their bottles.
7. Ask children to arrange bottles in a row so that they are “tuned” (from highest to lowest pitch) making sure that each gives you a different note.
8. Allow children to explore with the instruments and try to make up their own songs.

Questions to ask

- What did you hear when you blew into the bottles that were half way full with water?
- When you added more water, did you notice a change? What kind of change?
- What did you learn when you had 5 or 6 bottles of water at different amounts?

Extensions

Children can make their own guitars using rubber bands, some wood, and a shoebox. Children can explore with low and high pitches by striking the rubber bands at different places.

Resources

- Sound by Peter D. Riley. Gives an introduction to different kinds of sounds and how they are produced.
- Sound Science by Etta Kaner. Explores the nature of sound through experiments, riddles, interesting facts, puzzles, and games.
- Sound and Light: Science Facts and Experiments by David Glover. Uses activities and experiments to introduce the properties of light and sound.

Websites

- BrainPop: <http://www.brainpop.com/science/energy/sound/>. Provides educational movies that help make learning fun. In this movie, Tim and Moby introduce you to the world of sound.
- PhET: <http://phet.colorado.edu/simulations/sims.php?sim=Sound>. This interactive simulation allows students to analyze the properties of sound waves.
- School for Champions: <http://www.school-for-champions.com/science/sound.htm>. This website explains of how obstacles affect sound waves.
- Think Quest: Sound is Energy <http://library.thinkquest.org/5116/sound.htm>. Find out about sound waves and how their graph varies with change of pitch and volume.