

Distinguishing Between Sound and Noise

Description:

Students will be able to distinguish between sound and noise in their environment by performing active listening. They will also define the differences between each term.

Objectives:

- To distinguish between the concepts of sound and noise in the environment
- To explain and demonstrate how sound and noise are produced
- To discuss the health effects of noise in the environment

Vocabulary:

Noise, perception, sound

Recommended for:

1st-5th grade students

Materials:

- Tuning fork (can be purchased from Carolina Biological)
- Cup of water
- Whistle
- Blackboard and chalk

Background Information:

Noise is unwanted or unpleasant sound. People may perceive sounds and noise differently. Noise can cause mental and physical disturbances.

Method:

- Ask the students to define the word “sound.” Ask for examples of all the sounds they hear in their environment (ones they hear on a daily basis, indoors and outdoors). Write this list on the blackboard.
- Ask students how they think sound is produced and heard. Tell them that you can demonstrate how sound is produced.
- Have everyone put two fingers on their neck. At the count of three, have everyone hum and then stop. Question students on what they felt (vibrations and buzzing). This demonstrates that sounds are produced by vibrations.
- Tell the students they are all going to participate in an experiment. For this experiment, a cup of water and a tuning fork will be needed.
 - Ask students to describe what they think vibrations might look like – waves.
- Have students predict what might happen when you hit the tuning fork then put it in the cup of water. Demonstrate the experiment. Have students share their observations. What happened and why?
- Tell the students that you are going to play two different sound recordings. The first will be birds chirping and the second will be cars honking (find sound clips on YouTube).
- Have them raise their hands when they hear a sound or raise both hands when they hear a noise. Which recording is a noise? Why?

- At this point, it is important to emphasize to students the role of perception in differentiating between sound and noise. One person’s definition of noise is different from the next person. Use the example of loud music.
- Ask the students to revert back to the list of sounds they made at the beginning of the activity. Can they decide which ones are noises and which ones are sounds? Ask them to explain why (loud, hurt their ears, disturbs them).
- The student (or the teacher) can decide how to visualize the sounds:
 - With arrows pointing to the direction the sound came from and the size of the arrow representing the volume of the sound
 - With abstract shapes representing the sound in the area where the sound was heard (this is good for depicting noises in motion)
 - With drawings of the source of the sound, such as a car honking (the students can first map words and then add drawings).

Discussion:

- Discuss the ways sound can hurt us. Have students formulate ideas of how they can reduce their exposure to noise in the environment.
- Have students imagine the sound vibrations in the room. How many sources of sound are they hearing?

Extension:

- Have students make a sound map (use DEP’s *Sound Mapping in your Neighborhood* lesson).
- Each student can find their own “sit spot” within view of the teacher. They will have 7-10 minutes to listen carefully and attentively to their surroundings and to draw out a “Sound Map.”
- There are many ways to draw a sound map, but all start with marking the “sit spot.”
 - The sound map should have words and drawings. The words can be the source of the sound, the onomatopoeia (a word which imitates a natural sound), or both.

For more information contact:

New York City
 Department of Environmental Protection
 59-17 Junction Boulevard
 Flushing, NY 11373
educationoffice@dep.nyc.gov

Also visit DEP’s website at:

www.nyc.gov/dep