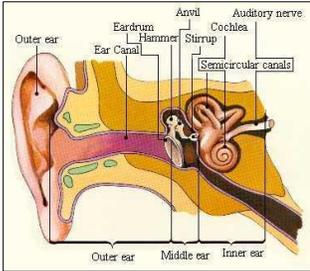


The Science of Sound

What is Sound?

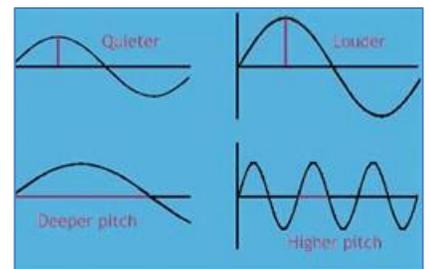


Your ears are extraordinary organs. They pick up all the sounds around you and then translate this information into a form your brain can understand. An object produces sound when it vibrates in matter. When something makes a noise, it sends vibrations, or sound waves, through the air.

The human eardrum is a stretched membrane, like the skin of a drum. When the sound waves hit your eardrum, it vibrates and the brain interprets these vibrations as sound.

How Can We Visualize Sound Waves?

We hear different sounds from different vibrating objects because of variations in the sound wave **frequency**. A higher wave frequency simply means that the air pressure fluctuation switches back and forth more quickly. We hear this as a higher **pitch**. When there are fewer fluctuations in a period of time, the pitch is lower. Take a look at a Slinky – the faster it moves up and down, the higher the pitch. The slower it moves, the lower the pitch.



Wind, String and Percussion Instruments



Musical instruments all create sound by producing vibrations, and they differ in the method that the vibrations are produced. In fact, musical instruments can be grouped into families according to the method by which they produce sound. In other words they are grouped in these categories because of what sound they make and how they make that sound. The different music families are wind, string and percussion. The program you saw today used instruments from some or all of those families. Here are some examples of wind instruments: trumpet, flute, trombone, oboe and harmonica. Examples of string instruments are: violin, viola, bass, guitar, piano and cello. Finally, here are examples of percussion instruments: drum, tambourine, maracas, and shakers.

Try This At School!

Now that you've learned a little about how sound works, take the time to create an instrument of your own! These are very simple – start by collecting clean recycled containers in your class such as toilet paper rolls, yogurt containers, chip cans, soup cans, vitamin bottles, soda bottles, and others. Try creating one of these simple instruments with your students:



Rubber Band Banjo: String five rubber bands across the opening of an empty tissue box or Styrofoam meat tray.

Maracas: Put dried beans or rice in an easter egg or soda bottle. Tape 2 clean plastic spoons around the egg.



For more information and to book this program for your school, contact Sue Wise at the Sheldon Concert Hall and Art Galleries. 314.533.9900 ext. 27 swise@thesheldon.org.