

Topics: Sound,
Vibrations, Musical
Instruments

Materials List

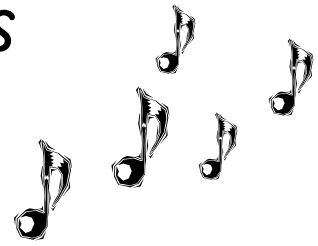
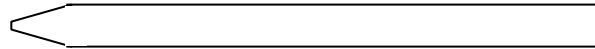
- ✓ Straws
- ✓ Scissors

This activity can be used
to teach:

- Sound (Next Generation Science Standards: Grade 1, Physical Science 4-1, 4-4)
- Energy and sound (Next Generation Science Standards: Grade 4, Physical Science 3-2, 3-4)

Straw Oboes

Tiny Aerophones



Players of these little noisemakers will never forget that sound is vibrations! Not only do you hear the sound (and annoy everyone around you), but you also feel the vibrations in your lips.

To Do and Notice (Note: clean scissors after each use to avoid spreading germs)

1. Remove the straw from any protective wrapping.
2. Cut the straw in half.
3. Flatten about 2.5 cm (1") of one end of the straw with your teeth.
4. Cut the flattened end of the straw into a point at about the 1 cm (1/2") mark.
5. Bite down slightly on the straw just beyond the cuts.
6. Blow into the straw to produce a noisemaker sound. It might take some practice to get the right pressure to make a sound... keep trying!

The Science Behind the Activity

Sound is caused by vibrations that travel in compression waves through the air (the medium) and into the ear. Once hitting the eardrum, the sound is sent to the brain's auditory cortex where it is analyzed and interpreted.

Objects make different sounds (louder, higher pitch, etc.) because of their size, density, and intensity of collisions. In this case, air rushing past the straw "reed" causes the 2 pieces of plastic to vibrate (a simple double-reed woodwind instrument). This sound resonates in the column of air inside the straw. Longer straws create lower frequency sounds (lower pitch).

Taking it Further

- Make straw oboes of different lengths. Which lengths have higher frequencies (higher pitch) and which have lower frequencies (lower pitch)?
- Find 2 straws with slightly different diameters so one straw slides inside the other. Make a straw slide trombone by placing one straw inside the other and sliding it in and out while blowing. Can you play a melody?

Web Resources (Visit www.raft.net/raft-idea?isid=419 for more resources!)

For more information about how woodwind instruments work, visit:

<http://newt.phys.unsw.edu.au/jw/woodwind.html>