

RAFT IDEAS

Topics: Sound, Vibration,
Music, Instruments

Materials List

(For each Glove-a-Phone)

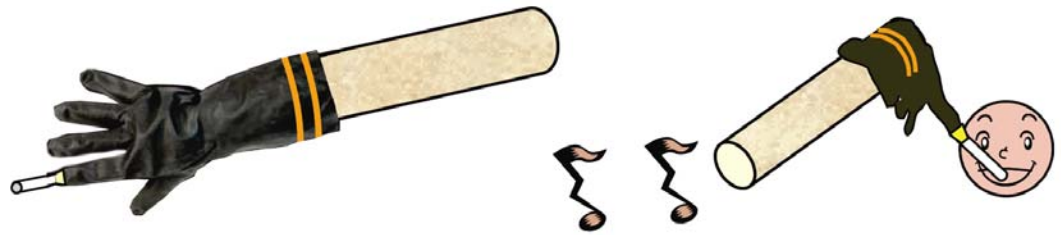
- ✓ Rubber or latex glove (**powder free!**)
- ✓ Sturdy tube, plastic or cardboard
- ✓ Piece of straw 8 cm - 10 cm (3" - 4") in length
- ✓ Rubber band
- ✓ Masking tape

This Activity can be used to teach:

- Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d)
- Investigation and Experimentation (CA Science Standards: Grades K-8)

Glove-a-Phone

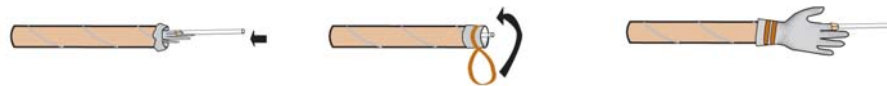
A “Note”worthy Sound Activity



Create a musical instrument in minutes that can be used for a wide range of explorations into the science of sound!

Assembly (Note: Always use a powder free glove for neatness and safety!)

1. Poke a small hole in the end of the pointer finger of the glove. Push the straw section through the hole from the inside of the glove, leaving a short section within the glove. Tape the straw and glove junction making an airtight seal.
2. Place the wrist of the glove over the tube and tuck the rest of the glove into the tube as shown. Use the rubber band to secure the glove to the tube. Gently pull out the straw and glove from inside the tube.



To Do and Notice

1. Gently pull and angle the glove so the palm area covers the tube opening **completely** (see the picture at the top of the page).
2. Blow through the straw to inflate the glove. Once there is sufficient air pressure in the glove, a “lovely” sound will be heard as air pushes past the edge of the glove covering the tube opening.
3. Experiment by varying how hard you pull the glove down over the tube.

The Science Behind the Activity

The part of the glove covering the tube opening forms a membrane similar to the covering on the head of a drum. As the fingers of the glove are inflated the pressure will cause the membrane to vibrate. For a given size tube there will also be certain frequencies that resonate, or build, within the tube producing a specific sound.

The glove-a-phone’s unique sound depends, mainly, on how tightly the membrane (glove section) is pulled and the length of the tube. The pitch, or frequency, produced is equal to the number of times per second (hertz) that the membrane vibrates. The tension and size of the membrane affect the pitch – more tension will result in the membrane vibrating at a higher frequency, while a larger membrane or thicker membrane at the same tension would produce a slightly lower frequency.

Taking it Further

- Make other glove-a-phones using different sizes of tubes – experiment with changing both the tube length and diameter.
- Experiment with varying your breath pressure.
- Touch the membrane to alter the tension of the membrane and thus the sound.
- Drill finger holes into the tube and experiment with how covering certain holes changes the sound