



SCIENCE EXPERIMENT

Name: _____

Date: _____

For: _____

Making a Model of the Ear and Studying Vibrations



GOAL

Build a simple model of the ear to see how vibrations (sound waves) travel and cause movement.

BACKGROUND

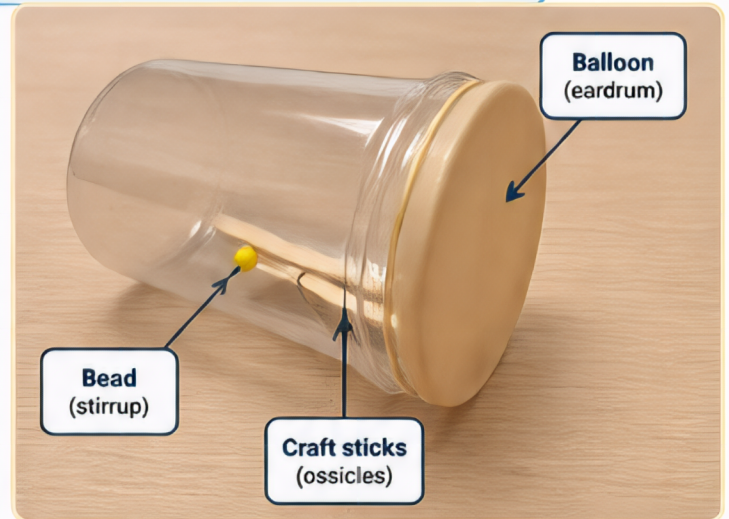
Sound is made of vibrations. When something vibrates, it sends out sound waves through the air. Our ears collect these waves and change them into signals our brain understands. In this model, you will see how vibrations make a membrane move and how that movement can be passed along.

MATERIALS

- 1 clear plastic cup (or jar)
- 1 balloon
- 1 rubber band
- 2 small craft sticks
- 1 small bead
- Hot glue or tape
- Speaker (phone, tablet, or small Bluetooth speaker)
- A song or tone generator
- Ruler (optional)

DIRECTIONS

1. Cut the end off the balloon and stretch the remaining piece tightly over the open end of the cup.
2. Secure it with a rubber band to create a tight membrane.
3. Glue or tape one craft stick to the center of the balloon (this is the eardrum).
4. Tape or glue the second craft stick to the first one so it can pivot like a lever.
5. Glue a bead to the end of the second stick. The bead is the "stirrup."
6. Let everything dry and make sure the sticks can move freely.



TEST IT!

1. Place the open end of the cup near a speaker.
2. Play music or a steady tone.
3. Watch the balloon (eardrum). What happens?
4. Watch the bead (stirrup). What happens?
5. Try changing the volume. What changes?
6. Try different pitches (high and low sounds). What do you notice?

WHAT HAPPENED?

Sound waves from the speaker made the balloon (eardrum) vibrate. Those vibrations moved the sticks (ossicles) and made the bead (stirrup) move. This shows how vibrations travel through the ear.

OBSERVATIONS

What happened to the balloon when the sound played?

What happened to the bead?

How did changing the volume affect the movement?

How did high sounds compare to low sounds?



THINK & EXTEND

1. Why do you think a tighter membrane made the bead move more (or less)?
2. What might happen if part of the ear was damaged or could not move?
3. Research: How do the real parts of the ear (eardrum, ossicles, cochlea) work together to help us hear?