

THE SODA CAN TELEPHONE

A. Question: *Through where is it easier for sound to travel, gases or solids?*

B. Materials Needed:

1. Two empty soda pop cans.
2. A string (same length as the classroom).
3. Nail and hammer.
4. Can opener.

C: Procedure:

1. Cut one end of the two soda cans completely with the can opener.
2. Punch a hole in the center of the other end with the nail and hammer.
3. Thread the string though the holes, such that the closed ends face each other and tie a large knot at the end of the string, so that it will not slip out of the hole.
4. Let two students stand at the far ends of the classroom, hold the cans keeping the string tight, and alternately speak softly and listen in the can.

D: Anticipated Results:

Students should be able to listen to each other when talking through the 'telephone'.

E: Thought Questions for Class Discussion:

1. How did the sound travel to the student's ear?
2. What did speaking in the can do to the bottom of the can?
3. Why did the string have to be held tightly?
4. Would this set-up work if we had a solid pipe or bar instead of the string between the two cans?
5. Could a whisper be heard from one end of the classroom to the other end, through the 'telephone'? Through the air?

F: Explanation:

By talking into the can, the vibrations from the vocal chords make the air in the can vibrate. These vibrations are transferred to the bottom of the can, which in turn vibrates. The same vibrations are traveling along the string in longitudinal waves, making the bottom of the other can vibrate. The air in the receiving can is thus reproducing the exact vibrations of the first can, resulting in the same voice of the original sender. A whisper could not be heard through air compared to a whisper through the 'telephone'. The waves travel through the solid string in the latter case, and it is much more facilitated. **Sound travels faster and easier through solids than through gases.**