

## **THE COAT HANGER CHURCH BELL**

**A. Question:** *Does sound travel faster through air?*

**B. Materials Needed:**

1. A pencil with eraser end.
2. A short piece of string.
3. A metal wire coat hanger.

**C: Procedure:**

1. Tie the string tightly to the pencil (opposite eraser end) and to the hook of the coat hanger.
2. Place the eraser end of the pencil in the ear and while holding it there, swing the coat hanger and let it hit a solid object (or hit the hanging coat hanger with another pencil).

**D: Anticipated Results:**

Students should be able to hear the sound and acknowledge the fact that sound travels faster through solid than through air.

**E: Thought Questions for Class Discussion:**

1. What do you hear with the ear in which the pencil is placed?
2. Why didn't you hear the coat hanger vibrations through the air?
3. What was the source of sound?
4. Describe how the vibrations reached the ear from the source.
5. What other objects could we hang from the string for a source of sound?
6. What would you do to hear someone's heartbeat?
7. What other applications of this principle do you encounter in daily life?

**F: Explanation:**

The coat hanger hitting a solid object would vibrate and act as the source of the sound. The vibrations travel through the string and the pencil to the ear drum. As the string and pencil are solids, it is much easier for the sound waves to travel through them than through the air. It is the vibrations of the pencil that are immediately transferred to the ear drum, that make the sound so audible.

Similarly, we place our ear against someone's chest, in order to hear his/her heartbeat. By placing our ear against the railroad tracks, we can hear a train approaching long before we can hear the train sounds through the air.