

# Experiments on hearing

## 1 Teaching notes

The following experiments should help the students to find out more about the sense of hearing: holding your ears closed shows that it is the pinna that picks up sound; the experiment with the cardboard tube illustrates the function of the eardrum, and the tube experiment demonstrates what is meant by directional hearing.

## 2 Practical activities

The cards can be used, for example, to set up different stations, i.e., each student does every experiment. Or the class is split into groups and each group does the experiments assigned to it. The observations made should be discussed and interpreted together in class.

**Safety information:** Before the students conduct the experiments, make them aware of the risk of injury when using tools with points or sharp edges and warn them to be careful.

### **Holding your ears closed:**

Why can we hardly hear anything when we hold our ears closed?

Why do we just hear a strange kind of humming?

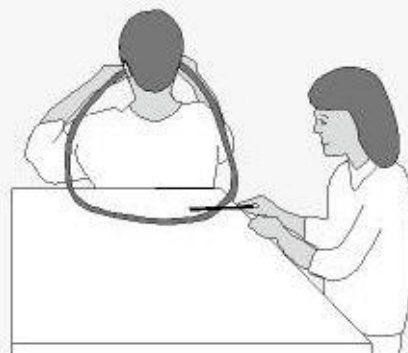
What other bodily sounds can you hear?



### **Directional hearing:**

Find and mark the middle of a long tube. One student holds the ends of the tube close up to his or her ears.

The other stands behind the first student and taps on one place on the tube. The first student has to say which direction the sound is coming from.



### Construct an eardrum:

Stick thin paper on to a cardboard roll.  
Put fine grains of sand on the paper.  
Say something into the open end of the roll.

What happens?

That's just how your eardrum works.



### Bells ringing:

You need a meter of string and a fork.

Put the fork exactly in the middle of the string, and tie the string tight round the fork.

You must wind the rest of the string around your index fingers several times.

Then you can tap the fork against the wall, and put your fingers in your ears.

What do you hear?

