

# Production of sound

## 1 Teaching notes

The following experiments should show students how sound can be produced by a variety of activities: rubbing, striking, plucking, or blowing. They should recognize that all sounds and noises are based on vibration.

## 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 up into groups, who then do the experiments assigned to them.

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.

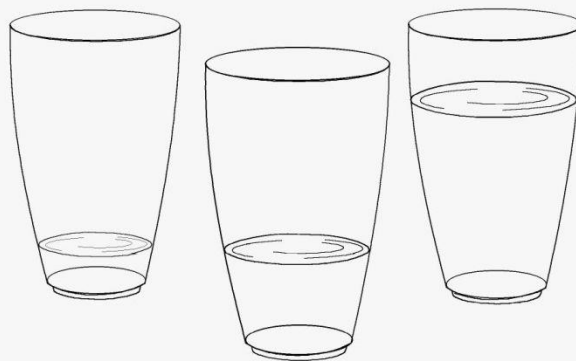
The students should handle glass objects such as bottles and glasses with care and not drop them. Make the students aware of the potential danger of cuts if the glass is broken.



### Pitch

Fill three identical glasses with different amounts of water.  
Strike them carefully with a teaspoon! What do you notice?

Practice different rhythms.



### Cup

Take a teaspoon, and strike it carefully on an empty coffee cup.

What can you hear?

Now fill the cup with water, and strike it again.

What has changed?



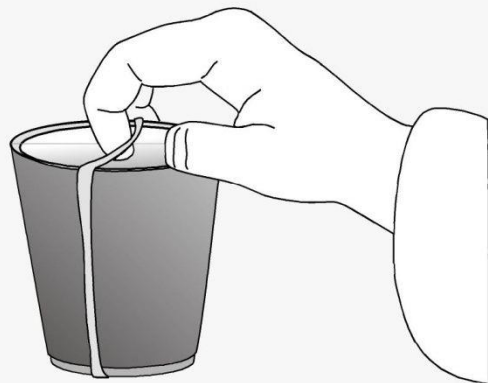
### Cup guitar

Pull the rubber band over the plastic cup! Pluck at the rubber band.

What can you hear, and what can you feel?

Hold the cup with the bottom up to your ear.

What has changed?

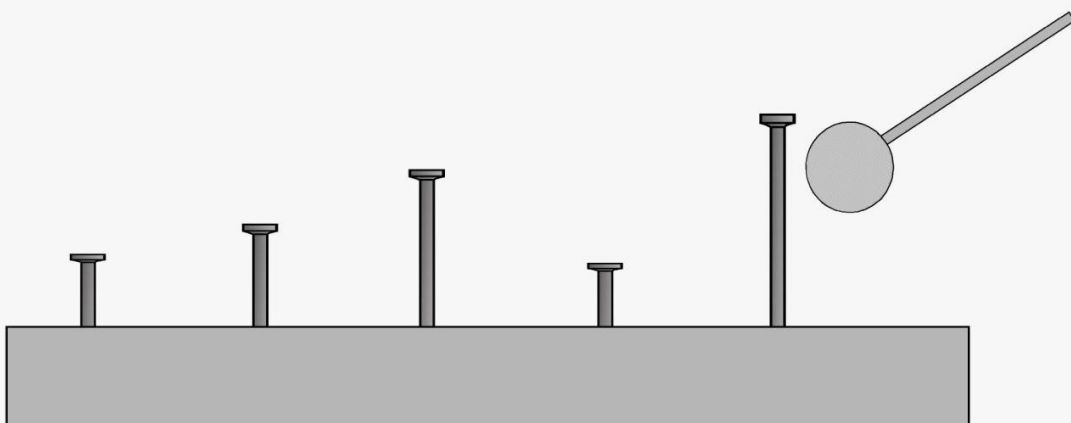


### Nails

Take nails of equal length, and knock them into a thick wooden board with a hammer, making sure that they are all in at different depths (as in the picture).

Strike them with a wooden dowelling rod or a pencil.

Practice different rhythms.

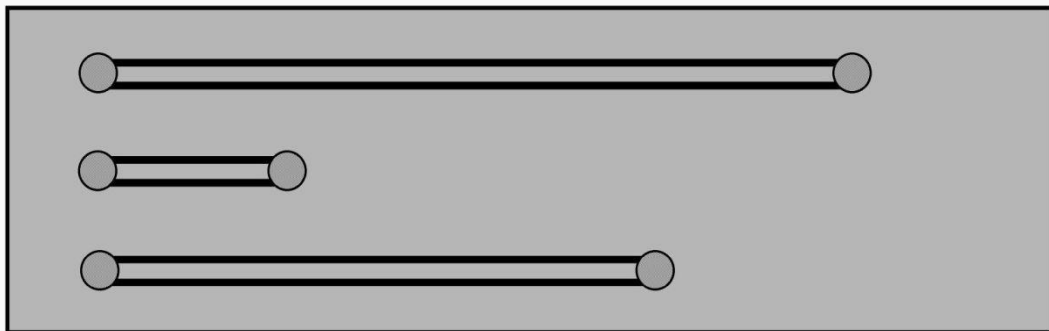


### Nail guitar

Take a thick wooden board, and knock several nails into it. Pairs of nails should be opposite each other.

Stretch rubber bands between the nails, and pluck at them.

Practice different rhythms.

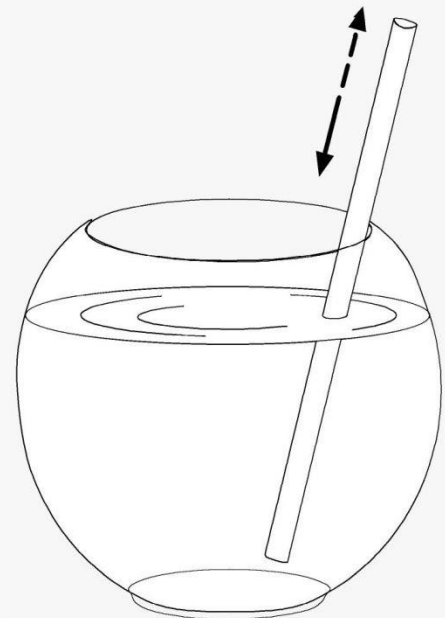


### Flute pipe

Partly fill a container, such as a vase with a bulbous base, with water.

Put a tube in the water, and blow on it like a flute.

What do you notice when the tube is put in the water at different depths?



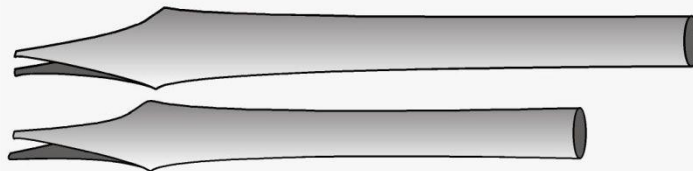
### Straw hummer

Cut different lengths of straw, each with a long tip. Press the tip tight together.

Put the tip in your mouth, and blow carefully.

If no sound can be heard, then bite a few times on the tip.

What do you notice with the different lengths of straw?

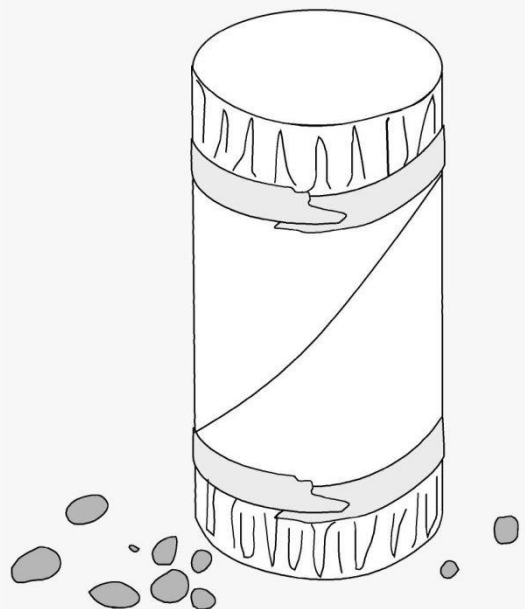


### Musical tube

Take an empty toilet paper roll, and fill it with grains of rice or gravel.

Seal off the roll then with foil and sticky tape.

Now you can shake the tube and practice different rhythms with it.

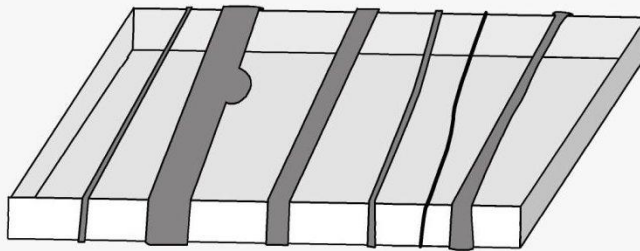




### Rubber zither

Stretch rubber bands of different thickness over a shoe box or an open tin.

Now you can pluck at the rubber bands and play a simple piece of music.

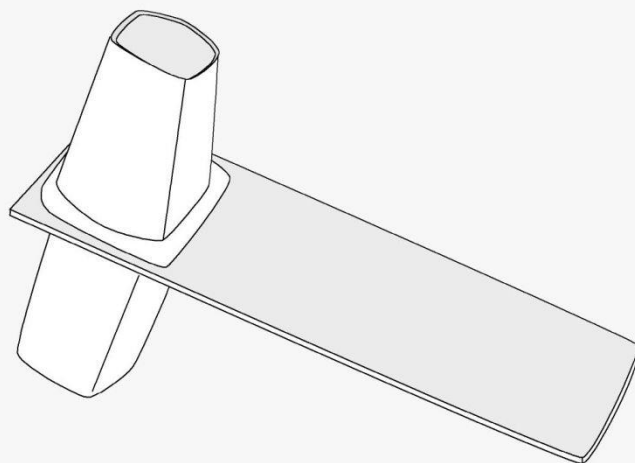


### Rattle

Take two small yoghurt cartons, and half fill them with grains of rice or gravel.

Stick them on the top end of both sides of a thin wooden board.

Now practice different rhythms.



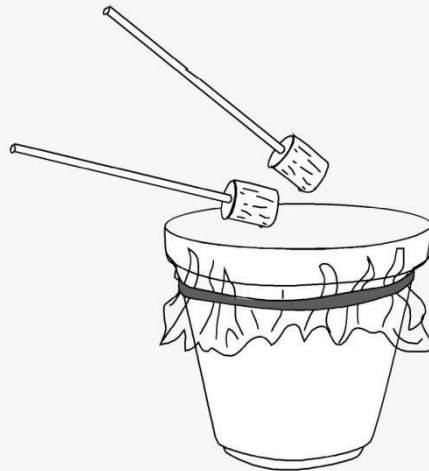


### Flowerpot drum

Stretch some greaseproof paper over the opening of a flowerpot, and fix it with a rubber band.

Stick a cork on to the end of two skewers, and strike the greaseproof paper with them.

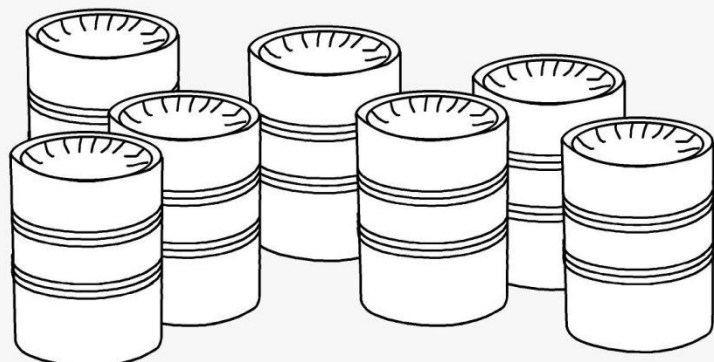
Practice different rhythms.



### Canophone

Take six empty cans, and press in the bottom with a screwdriver, making sure that you press them in to varying depths.

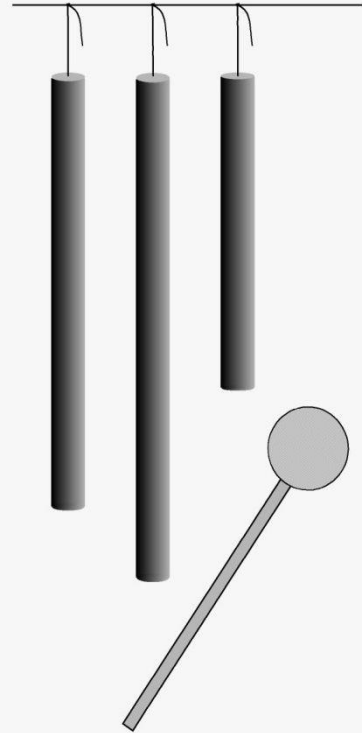
Now you can strike the cans with the spoon.





### Metal chimes

Hang up different metal rods from threads, and make them chime!



### Bottle organ

Different-shaped bottles are filled with different amounts of water. Blow on them. By adjusting the amount of water in the bottles, different sounds can be produced.

Try to play a scale.

