



Making a speaker / Teachers notes

Focus

The activity is designed to introduce students to the construction of a simple speaker and how it works.

Objectives

Students will:

- learn about how a simple speaker works
- construct a simple speaker.

Outcomes

All students will:

- construct a simple speaker and test it by attaching it to the exposed wires cut from a cheap set of ear phones attached to a CD player or mp3 player.

Most students will also:

- be able to describe what happens when they connect the speaker to the player.

Some students will also:

- explain how the speaker works.

Equipment

- 1 Magnet (round 0.5 cm thick).
- 1 Business card.
- Wire (38 SWG or 32 AWG).
- Paper (printer).
- Tape (plastic or masking).
- Glue (model and hot glue gun).
- Tweezers.
- Worksheet: *Making a speaker* (1 copy per student).

- Scissors.
- Ballpoint pen.
- Lego bricks or wood.
- Ruler.
- Leads with crocodile clips attached at each end.
- CD player with exposed lead end from a cheap pair of ear phones for each group to test their speakers.

Running the activity

Tell the students that they are going to make a simple speaker. Give the students a copy of the 'Making your own speaker' worksheet. Introduce the equipment they are going to use and the procedure. Emphasise the following points:

- They should follow the instructions step by step and refer to the pictures for help.
- The coiled wires should move freely.
- The cards should be completely glued to the cup.
- The coil should have no loose wires. Try to keep the coil tight and secure it with tape. Loose wire may vibrate and cause distortion.
- The coil should not touch the magnet. Try to make the coil wider. Also, the coil should not touch the frame!
- Make sure the coil has at least 50 turns or, if you have a multi-meter, more than 7 ohms.
- Adjust the height of the coil in reference to the magnet to improve the quality of sound.

The students should test their speaker by using leads with crocodile clips to attach their speakers to the exposed wires of a cheap set of ear phones attached to a CD player. Some personal or portable audio devices do not have enough power to drive a speaker. Try many audio sources if you get no sound or the volume is low.

When the students have made their speakers you can use their observations to introduce how the sound is created or let the students develop their own explanations by using secondary sources. Debrief the activity by asking groups to present their ideas, emphasise the key points and correct any misconceptions.