5. The howler

The activity

NOS strand: Investigating in science

Ask questions, find evidence, explore simple models and carry out appropriate investigations to develop simple explanations.

Scientists gather evidence to help develop their understanding of ideas. The explanations they form are based on the evidence they collect. They use their evidence to support their ideas. Making careful observations through different investigative approaches is very important. When interpreting data, scientists try to be as objective as possible.

Contextual strand: Physical world – Physical inquiry and physics concepts

Explore everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves and heat.

Students will: observe how vibrations create sound.

Materials

- 2 paper cups
- String
- Paper clip
- Water
- Small piece of sponge
- Sound strip (eg, Talkie Tape from www.talkietapes.com)

Explore

1. Make a small hole in the bottom of a cup.
2. Cut about 40 cm of string and thread it through from the outside of one of the cups, tying it to a paper clip inside the cup.
3. Pull the string hanging from the bottom of the cup so that the paper clip sits firmly on the bottom of the inside of the cup (Figure 5.1).
4. Wet the piece of sponge and pinch it around the string under the base of the cup.
5. Holding the cup by the base, pull the damp sponge down the string (Figure 5.2).
6. Suddenly the cup is growling and squealing. Why?

Figure 5.1: Paper clip attached to string and sitting at bottom of cup

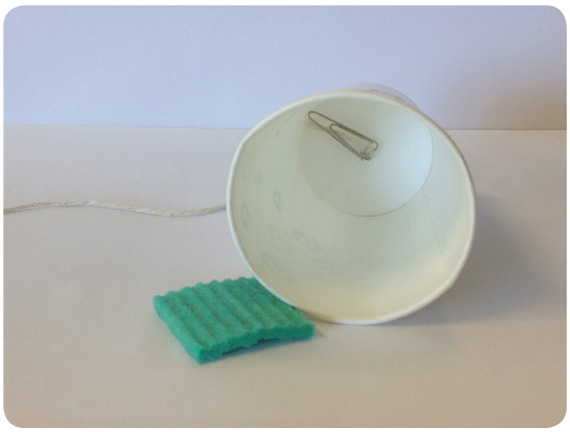

Figure 5.2: Pulling the damp sponge down the string

The details

NOS strand: Investigating in science

Ask questions, find evidence, explore simple models and carry out appropriate investigations to develop simple explanations.

Nature of science wonderings. As students explore all the different variables that affect the vibrations, encourage them to also try out different ways of gathering and recording data. They can then use these data (observations) when they try to explain what is happening. Challenge the students' ideas and encourage them to use the evidence to support their ideas. Do other students' observations also support their ideas?

Contextual strand: Physical world – Physical inquiry and physics concepts

Explore everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves and heat.

What is happening? Sound travels as vibrations. The sound vibrations travel through the air and into our ears. When the wet sponge is rubbed up and down the string, the fibres stick to the string, causing friction. The friction causes the string to vibrate. These vibrations are carried along the string to the cup, causing the cup and the air inside the cup to vibrate. The cup amplifies the sound, making it louder.

Expand

- Try different lengths of string.
- Make a hole in the base of the second cup and poke the sharp end of the red plastic sound strip through it. Tape the end inside the base of the cup or tie a knot in the end of the red strip and pull it down tight to the inside base of the cup. Run your thumbnail down the side of the strip containing the ridges. Can you hear a message? Make the connections to how a record is made.

Science wonderings

I wonder:

- what would happen if I used a dry sponge
- what would happen if I used a tin instead of a paper cup
- what would happen if I changed the size of the container
- whether different lengths of string make different sounds
- whether I can rub the string with other objects that create vibrations.