

Preface

How can you teach the basics of sound scientific investigation, while keeping your endeavours fun and relevant? That dilemma has motivated me to create this book, which is full of a huge range of exciting ideas for science classroom experiments, all of which have been tried and tested over my 17 years as a primary school teacher.

With the help of this book, children are encouraged to:

- ◆ Pose questions
- ◆ Make predictions
- ◆ Decide what evidence to collect
- ◆ Design a fair test
- ◆ Observe
- ◆ Record these observations appropriately and accurately
- ◆ Indicate whether a prediction was valid
- ◆ Explain their findings in scientific terms

The book comprises three main units, with sub-sections as follows:

- ◆ Life processes and living things
 - Humans and other animals
 - Living things in their environment
- ◆ Materials and their properties
 - Grouping and classifying
- ◆ Physical processes
 - Light and its properties
 - Sound and its properties
 - Forces and motion
 - Electricity

The activities require a minimum of preparation and use only the simplest of science equipment. As with all practical activities, safety is of utmost importance, and safety recommendations have been added where relevant. The variety of activities support the opportunity to develop your children's skills of scientific enquiry. So use them, adapt them, make them your own – but above all, enjoy them.

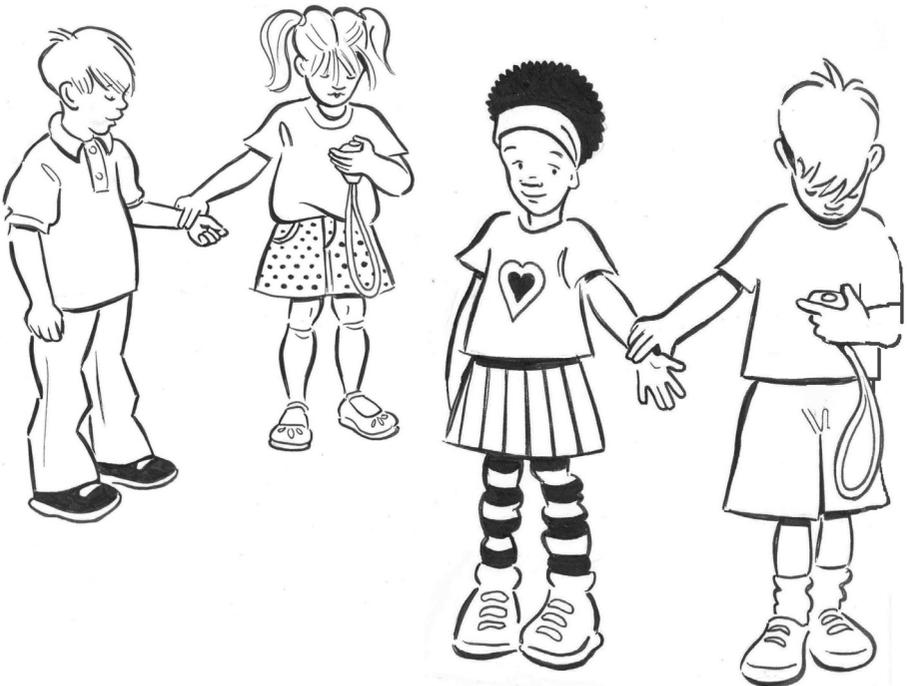
Anita Loughrey

Keeping healthy

16. Are everybody's pulse rates the same?

You will need: stopwatches.

- ◆ Show the children how to find their pulse in their wrist.
- ◆ Divide the class into pairs. Ask the pairs to time each other's pulses for a minute. How many beats can they count in a minute?
- ◆ Now ask them to time for 15 seconds and multiply by four to get their average pulse rate.
- ◆ Are their pulse rates the same?



53. Which material would be best to make an umbrella?

You will need: selection of materials cut into squares of approximately 10cm² – drawing paper, paper towel, newspaper, kitchen roll, bin liner, tinfoil, tissue paper, fabric, felt, fur (enough for one sample per pair); pipettes; plastic cups; elastic bands; water.

- ◆ Give the children the selection of materials and tell them they need to test each material to see if it would be any good to make an umbrella.
- ◆ Ask them what an umbrella would need to be like (encourage them to suggest 'waterproof').
- ◆ Tell them that they are going to test the different materials available to see if they are waterproof.
- ◆ Explain that they will need to secure the material to the cup and slowly drip the same amount of water into the middle of each piece of material with a pipette. If there is water in the cup afterwards, the material is not waterproof.
- ◆ Group children into pairs. Allow time for each pair to test all the materials available. Put them in the order of most waterproof, using 1 as most waterproof and 10 as the least.

Talk about/discuss:

- ◆ Help the class to discuss methods and results. Did they notice that some of the materials absorbed the water and got wet?
- ◆ Which material did they find to be the best?

More ideas:

- ◆ As a design-and-make task, encourage the children to make an umbrella with the material they found to be the best. The umbrella does not need to shut.

100. How can you make your shadow bigger?

You will need: overhead projector; white chalk; A3 black sugar paper; white art paper; chair; wall; Blu-tack®.

- ◆ Challenge the children to fill an A3 black piece of sugar paper with the silhouette of the side view of their face.
- ◆ Stick the black sugar paper to the wall with Blu-tack®.
- ◆ Each child in the group should take it in turns using the overhead projector and allocate a member in their group to move and operate the projector, draw around a silhouette, sit in the 'hot seat' to have their shadow enlarged and cut out a silhouette.
- ◆ Repeat until everyone in the group has had a turn at all tasks.
- ◆ The silhouettes can then be stuck on a larger sheet of white art paper for display within the classroom.
- ◆ Remind each group that they should not tell the next group how they did it, so that all groups can investigate the phenomenon for themselves.

Talk about/discuss:

- ◆ Ask the children to list the factors they found which affected the size and position of their shadows.
- ◆ How did changing one factor cause their shadow to change?

Safety:

Caution the children that parts of a projector, especially the bulb, can become very hot, and to take particular care not to touch these parts. If necessary, have an adult adjust the projector at the children's direction.