

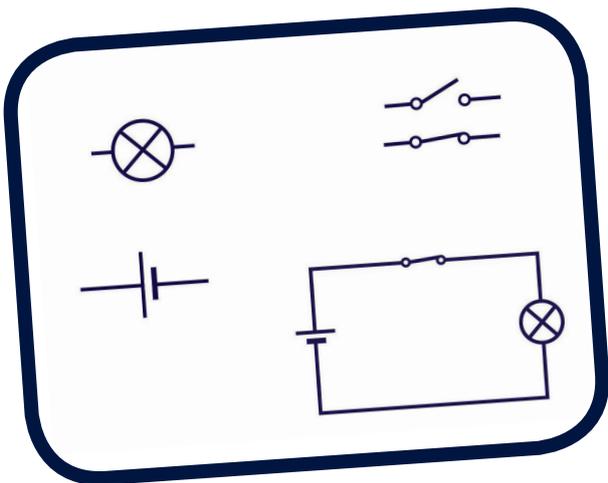


### Teacher input

This lesson should be done in two parts, the first part is much shorter and it should be done as one activity whilst some children are creating the dough used for the electric art.

### Part 1

How is a circuit drawn? There is an example on the PowerPoint (also available in the resources pack) that shows the symbols for a battery, a light and a switch, and explains what electricity is made of. It also includes the instructions for the game, so you can read them through with the children if you feel it's necessary.



### Curriculum for Excellence link

- I have used a range of electrical components to help to make a variety of circuits for differing purposes. I can represent my circuit using symbols and describe the transfer of energy around the circuit.

SCN 2-09a

### Learning objective

- I can use recognised symbols when using drawn circuits.

### Differentiation

Lower ability children can use the set of instructions that includes the circuit diagram (in the resources pack). Challenge more able children to build the circuit using the set of instructions without the



### Part 2

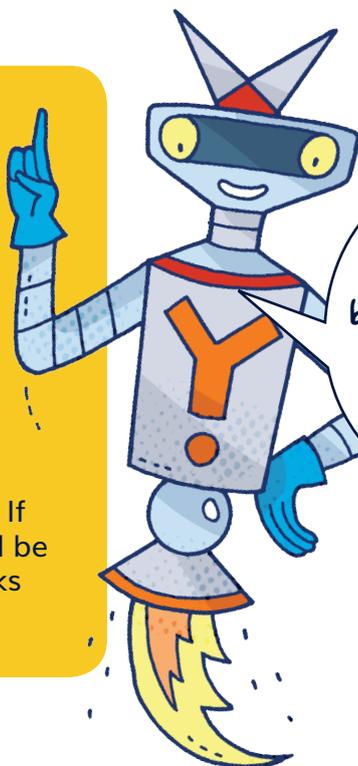
The salt dough should be made while some children are playing the game. They will use their knowledge of the symbols when they plan their electric art.

### Resources

- Board games and pieces per pair (included in the resources pack)
- Dice
- Scissors

### Activity

In pairs, the children can follow the instructions to play the circuit game. If evidence is needed, the circuits could be stuck into the children's science books once the game is completed.



Remember, whenever you are working with batteries, always disconnect them after use, as the circuit can get hot and cause fire.

## Teacher input

### Part 2

Share Emmi's Eco Club page about electric art (included in the PowerPoint). Ask the children how the bulb could be made brighter or the buzzer louder? What would need to be increased? Give the children the chance to discuss the answer.

### Resources

The recipe below will make enough dough for five pairs of children, so you will need to make enough batches for the whole class.

- 160 g of flour
- 165 ml of water
- 3 tbsp of salt
- 2 tbsp of cream of tartar
- 2 tbsp of vegetable oil

### Equipment needed:

- Tablespoons
- Measuring jug
- Scales
- Pan
- Wooden spoon
- Access to a hob
- Cookie cutters (optional)
- Foil – at least 20 cm long & 3 cm wide
- Batteries
- LEDs or buzzers

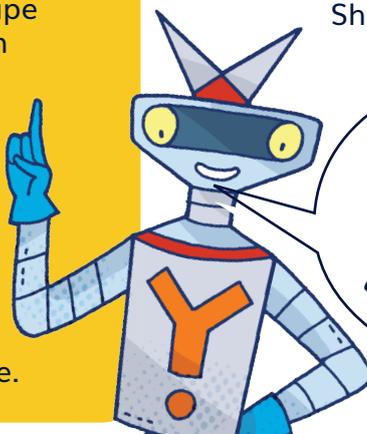


### Activity

Explain to the class that salt dough has the texture of modelling dough.

Encourage them to choose a shape to cut in half, like the example on the PowerPoint.

In pairs, children should first create a simple plan of their electric art. Remind them they will need to leave a gap for the electricity to flow through the LED or the buzzer. Explain LED bulbs have a negative and a positive. The longer pin is positive.



The dough conducts electricity, so you can use it to replace the wires in simple circuits. The more voltage you add to the circuit the brighter the bulb or the louder the buzzer.

### Curriculum for Excellence

- I have used a range of electrical components to help to make a variety of circuits for differing purposes. I can represent my circuit using symbols and describe the transfer of energy around the circuit.

SCN 2-09a

### Learning objective

- I can explain how the brightness of a lamp or the volume of a buzzer is changed.

### Activity continued

The children's art should light up brighter or buzz louder than Emmi's, so they should explain how they will do this in their plan (use more than two batteries, increasing the voltage). Their plans should include a diagram, using the symbols. In the resources pack there is a suggested guide, showing all the symbols for the circuit they would need to draw.

### Plenary

Give the children the opportunity to present their electric art design. Encourage them to explain how it works. Challenge the more able thinkers to explain, using the correct terminology. All the children should try to explain how they know their light or buzzer will be brighter or louder than Emmi's.

Share Y's explanation below...

### ISSUE 34 Cross curricular links

Reading: Sensational Scientist Michael Faraday, pages 28-29; interview with Nikita Hari, an electrical engineer whose job it is to blow things up, pages 22-23; How Stuff Works – plugs, pages 24-25; 'How green is our electricity?', pages 6-7.

