Buzzer

Approach: One to one *Level:* Year 4 and year 8

Focus: Using an electrical circuit for a particular purpose.

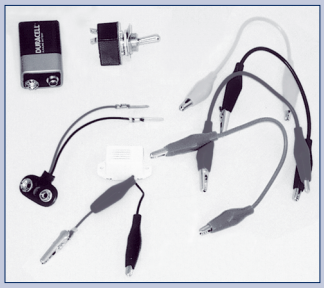
Resources: Floor plan of house, red pencil, battery, 4 wires with crocodile clips, switch, buzzer.

Questions/instructions:

Imagine that someone in your family is sick in bed. They feel too sick to call out when they want something. You decide to make it possible for them to call you when they want something by using an electrical buzzer.

Here is some equipment for making a buzzer that works.

Show equipment and name each component as you lay it out on the table.



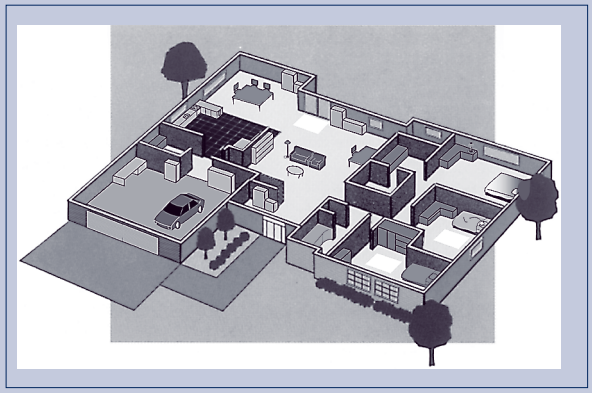
1. Before you have a go with this equipment, try to describe to me how you would connect the equipment together to make the buzzer go.

Student explains.

2. Now you can have a go at making the buzzer go. You will need to use all of the pieces of wire. If you get stuck I can help you.

Allow time.

		% responses y4	% responses y8
	made buzzer sound	98	93
Help needed:	none	10	34
	some clues	39	33
	detailed verbal instructions	12	6
	hands-on help	39	27



Show student house plan.

Here is a plan of the house where the family lives. This is the sick person's bedroom [room with person in bed], and here is the living room where most of the family will be.

3. Think about how you would set up the buzzer so that it would help the sick person in this house. Draw your ideas on this house plan, and show the main parts of the system you would make. As you are drawing, tell me what you are doing and why.

Give plan and red pencil to student.
Prompt for explanation if necessary.

		% responses y4	% responses y8
Features of plan	switch in bedroom	84	94
	switch accessible to person in bed	77	90
	buzzer in place to be heard	63	87
	battery or identifiable power source in circuit	55	62
	wire(s) running from switch/battery to buzzer	81	90
	two wires shown *(to complete circuit)*	27	28
Total score:	9–10	8	28
	7–8	38	41
	5–6	35	22
	3–4	12	8
	0–2	7	1

Commentary:

About 20 percent more year 8 than year 4 students performed very well on this task. The importance of a power source and (particularly) a two wire circuit was often not recognised in the plans drawn.