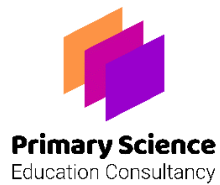





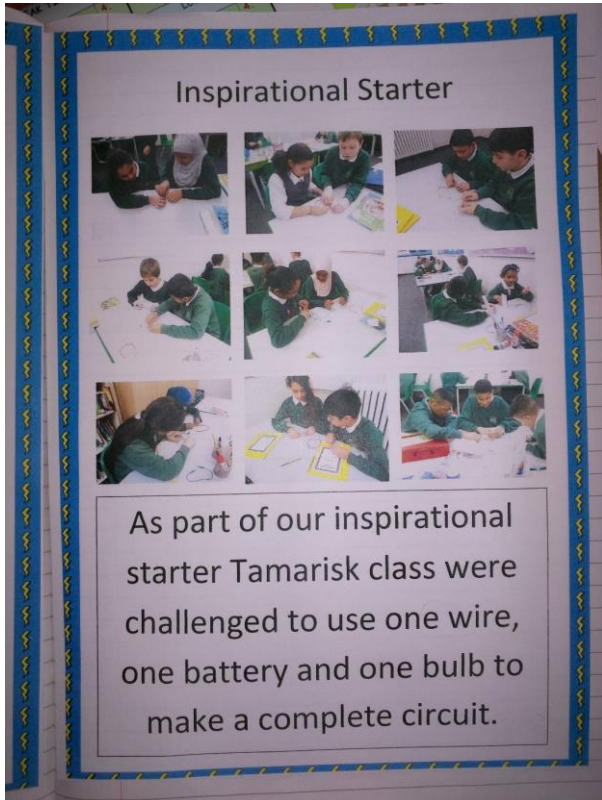
Examples of Work


Julie

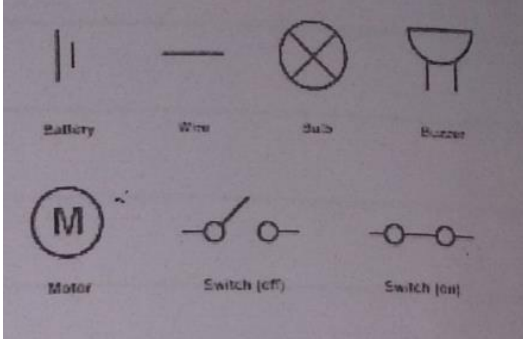
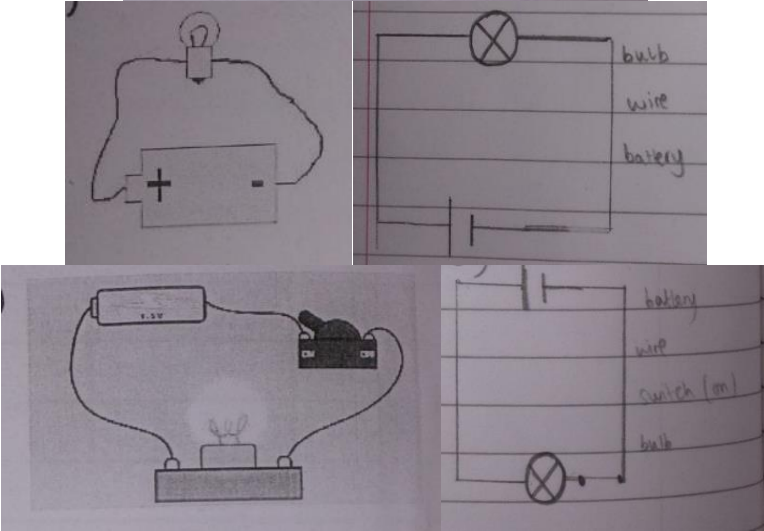
Electricity - Year 6




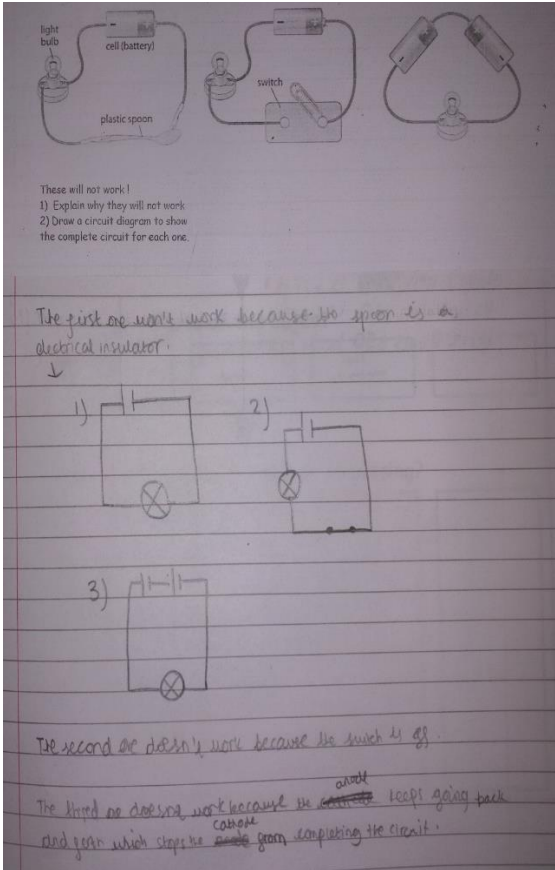
	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (Y4) 			
	Description of activity			
	<p>Before starting the topic, the children were given some equipment to explore. The challenge was to light a bulb using only one wire. This was an opportunity for children to engage their previous learning and for the teacher to ensure that all children were able to make a complete circuit.</p>			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
Teacher observations		<p>Julie remembers from Year 4 how to connect components into a complete circuit.</p>
<p>Julie built the circuit with no support.</p>		Working scientifically


	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Use recognised symbols when representing a simple circuit in a diagram. 			
	Description of activity			
	The children were given pictures of circuits which they then made. They were then given the standard symbols and shown how to draw a circuit diagram correctly.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		<p>Julie makes the circuits shown in the pictorial diagrams. She correctly draws these two circuit diagrams, using the symbols provided.</p> <p>This is not sufficient evidence for her to be secure with this skill.</p>
Teacher observations		Working scientifically
<p>The correct switch symbol to use is the open symbol which does not need to have the blobs. The closed symbol shown should not be used.</p>		

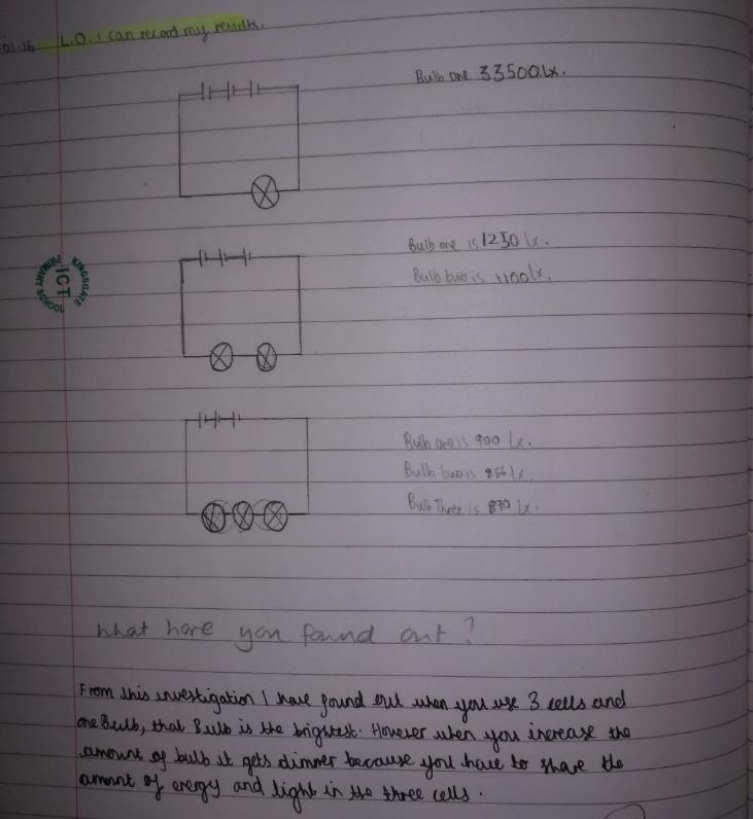
	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Use recognised symbols when representing a simple circuit in a diagram. 			
	Description of activity			
<p>The children were given further pictorial diagrams and asked to predict whether the circuits would work or not, based on their knowledge from Year 4. They were then also asked to draw circuit diagrams for each of the circuits corrected to make them work.</p>				


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
Teacher observations		<p>Julie uses her subject knowledge from Year 4 to correctly predict which circuits would or would not work, giving reasons why.</p> <p>She draws the circuit diagrams, although the incorrect symbol for the switch is used (see note on page 3).</p>
		Working scientifically

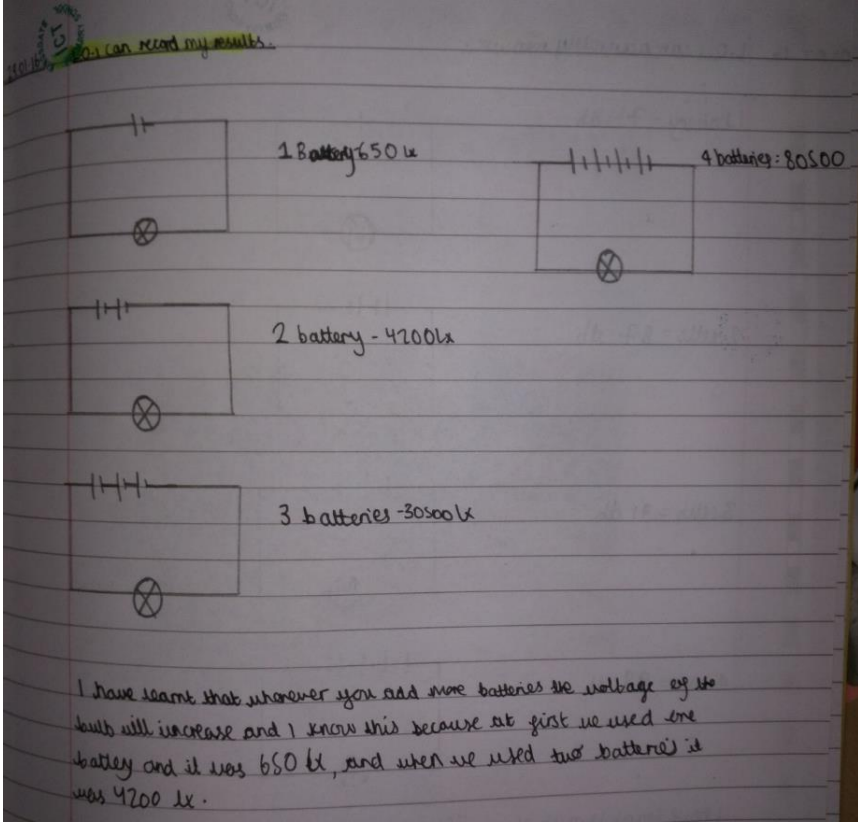
	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, and the on/off position of switches. 			
	Description of activity			
<p>The children discussed the concept cartoon. Following on from this, the children were asked to take one of the statements and gather evidence to support or refute it.</p>				


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>"I think the boy, bottom right, is wrong. If there are more bulbs, they will not be as bright. To test this, I will keep the circuit the same but add more bulbs."</p>		<p style="background-color: #D9534F; color: white; text-align: center; padding: 5px;">Working scientifically</p> <p>While Julie makes a prediction, it is not based on test results or knowledge gained as a result of enquiry.</p> <p>She plans how to control variables to gather data to confirm her prediction.</p>
Teacher observations		

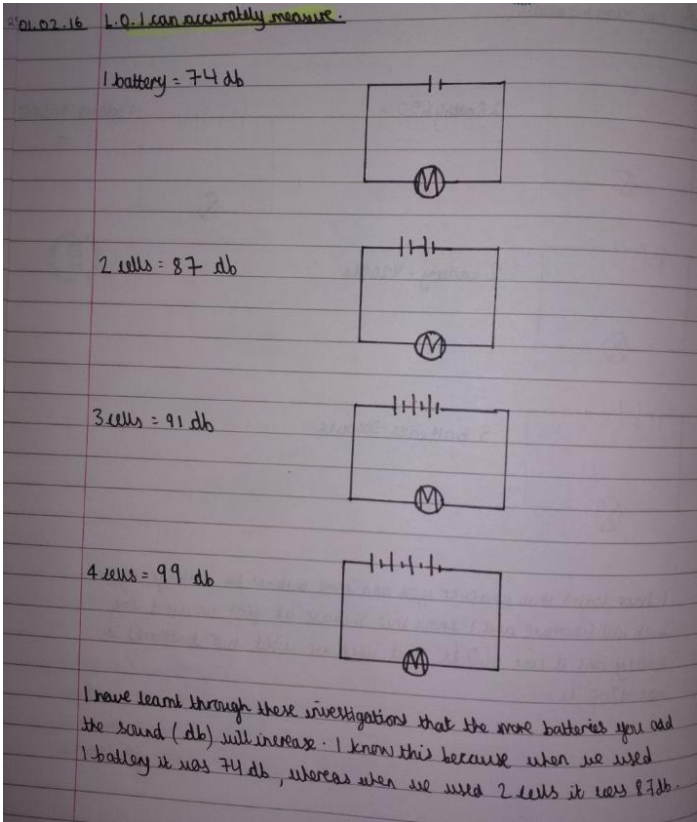
	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. 			
	Description of activity			
	The children carried out an investigation to gather evidence to support or refute their prediction.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
Teacher observations		<p>Julie observed that, as the number of bulbs in the circuit increased, the brightness of each bulb decreased.</p> <p>She has shown again that she can correctly draw circuit diagrams, now using a ruler.</p>
<p>Julie used the datalogger to take measurements of the light given out by the light bulbs. She controlled the distance the datalogger was from each bulb and placed the bulb in a toilet roll holder to block out other light.</p>	<p>what have you found out?</p> <p>From this investigation I have found out when you use 3 cells and one bulb, that bulb is the brightest. However when you increase the amount of bulb it gets dimmer because you have to share the amount of energy and light in the three cells.</p>	Working scientifically
		<p>Julie recognises the need to control variables.</p> <p>Julie uses her evidence to support her prediction.</p>

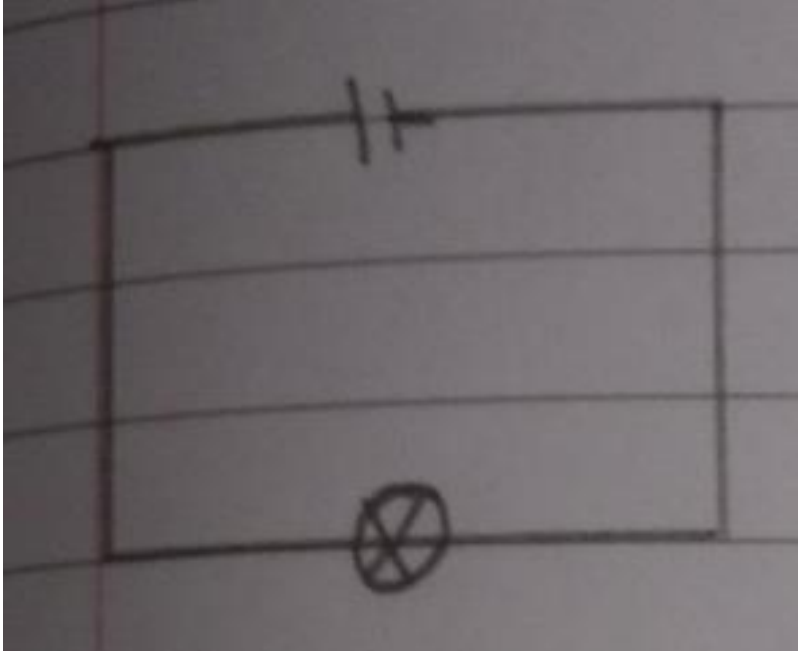
	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. 			
	Description of activity			
	Julie extended this work to explore adding more cells to a circuit.			

EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>"I expect the bulbs to be brighter when more batteries are added."</p>		<p>Julie observed that, as the number of cells in the circuit increased, the brightness of each bulb increased.</p>
<p>Teacher observations</p> <p>The word 'voltage' is not used correctly here.</p>		<p style="background-color: #ff0000; color: white; text-align: center;">Working scientifically</p> <p>Julie systematically adds cells to the circuit to gather evidence to support her prediction and reports on her findings.</p>

	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. 			
	Description of activity			
	The children were asked to take measurements to explore how the motor varied when additional cells were added to the circuit.			

EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		<p>Julie observes that, as the number of cells in the circuit increased, the amount of sound the motor produced increased.</p>
<p>Teacher observations</p> <p>Julie chose to use the datalogger to measure the sound produced.</p>		<p>Working scientifically</p> <p>Julie systematically adds cells to the circuit to gather evidence to answer the question and reports on her findings.</p>

	Year	6	Topic	Electricity
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. 			
	Description of activity			
	Julie also explored using cells of different physical sizes (D, C, AA, AAA, referred to as bigger cells on the concept cartoon) to see the effect of this on a light bulb.			

EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>"I put different sized batteries in the circuit to see how this changed the brightness of the bulb.</p> <p>"With each of these batteries, the bulb was the same brightness because they were all 1.5V."</p>		<p>Julie shows consistently that she is able to change circuits, stating the cause and effect.</p>
Teacher observations	<p>Note Cells can have different voltages. When the cell has a higher voltage, the bulb is brighter.</p>	Working scientifically
		<p>Julie changes her circuit to explore her ideas and reports on her findings verbally.</p>



Overall summary

Secure

Julie makes a basic circuit and uses a switch to control it. She adapts the circuit to make the bulbs brighter or dimmer. She uses a datalogger to gather evidence to show how the brightness of a bulb can be changed. She shows consistently that she can draw clear circuit diagrams, using the standard circuit symbols, although there is still an issue with the switch symbol used, due to the use of an inappropriate source/worksheet.



Acknowledgements

- *Concept Cartoons in Science Education*, Naylor S, Millgate House Education