

National Curriculum

Knowledge and skills

- To know how to make a simple circuit.
- To know that simple circuits involve batteries, wires, bulbs and other component.
- To be able to design and carry out an investigation systematically.
- To know which materials conduct electricity and which do not.
- To know that a switch can be used to break a circuit.

Vocabulary

Circuit, electricity, battery, bulb, wire, switch, attached, combined, lightbulb, conduct,

Snapshot overview

Exploring electricity and how circuits work.

Electricity safety.

Making a simple circuit and experimenting with breaking circuits.

Experimenting with different materials as conductors.

Experimenting with different conductors and writing up their investigation.

Design and make a circuit for Christmas lights.

Design and make a circuit for Christmas tree lights

Medium Term planning- Science

Year Group: Year 2

Term: Autumn 2

Topic: Electricity

	Learning Objective	Input (including key questions and vocabulary)	Task including scaffold and differentiation	How will the learning be assessed?
Session 1	<p>I can explain what electricity is. I can explore and understand how electricity works.</p>	<p>Hook: (some suggestions)</p> <ul style="list-style-type: none"> ● Turn off fuse box/unplug something and ask children to explain why it is not working. ● Unscrew one bulb of fairy lights and elicit explanations from children as to why it does not work ● Compare light sources e.g. a lamp with the sun. What is the same? What is different? <p>Have example circuits already set up in the room. Children to work in mixed ability groups to explore and experiment with ready-made circuits, discussing their findings in groups - record ideas on sugar paper -working wall.</p> <ul style="list-style-type: none"> - What do you see/notice? - What have you found out? - What is the same and what is different? - What do you think is making it work? How would you stop it working? What would happen if you changed.....? - How does it work? <p>Gather children back on the carpet to discuss what they saw. Introduce technical language e.g. circuit, wire, bulb, battery, switch, conduct, crocodile clip. As discussions are taking place LSA to record key vocab on the working wall for children to refer to - discuss the meaning. Explain how a circuit works using circuit PowerPoint. Questioning and investigating.</p>	<p>Mixed ability groups</p> <p>Support - scaffold with questioning</p> <p>challenge - what have you seen at home/in every day life that links to this? What words can you use to describe what is happening? Does it always work?</p>	<p>Observations Discussions</p>

<p>Sess ion 2</p>	<p>I can make a simple circuit.</p>	<p>Recap previous learning including language from working wall - show the electricity safety powerpoint and discuss safety around electricity.</p> <p>Hook: Help! Site manager can't get the lights in the hall working! Can we help him make a circuit to turn on the light bulb? Explain we are going to make a circuit to light a bulb.</p> <p>In mixed ability groups, try to make a circuit which will light a bulb. How many wires will they use? What order will they place the components? What happens if.....? If you change the order, does it change the outcome....? Predict and investigate what happens when you break the circuit - write prediction as a group on sugar paper. Remind them what language they need to use when writing a prediction. What does this tell you about how electricity works?</p> <p>Mixed ability groups to then collate what they have found out ready to present to class - this can be done in any format e.g. presentation, diagram, showing with physical objects etc.</p> <p>Plenary: Children to present their findings in groups in a way they choose using e.g. presentation to class, using diagrams, showing another group how to create a circuit and what happens when you break the circuit.</p> <p>Questioning, predicting, investigating, presenting evidence, interpreting evidence.</p>	<p>Support: mixed ability groups, adult support as needed - Vocab list with pictures of definition</p> <p>Challenge: if resources are available ensure chn have tried out range of bulb sizes/lead sizes - predict what will happen if the lead is longer /shorter or if bulb is bigger/smaller.</p> <p>Challenge – I can design a circuit with 2 switches and 2 lightbulbs.</p>	
<p>Sess ion 3 and 4</p>	<p>I can investigate what materials conduct electricity.</p>	<p>Starter: Refer to vocab boards on working wall and discuss meaning of vocabulary</p> <p>Hook: Help the teacher! We have run out of wires. Is there anything else we can use to conduct the electricity in a simple circuit?</p>	<p>All: blank table to be given to children to record their findings.</p> <p>Support - scribe/draw pictures</p>	<p>Evaluation in books.</p>

	<p>This is to be done across 2 sessions</p>	<p><u>Children to investigate what materials conduct electricity</u> -Suggested materials: paper clip, tin foil, wood (pencil), rubber, BluTac. Send chn to tables in mixed ability groups to look at these materials - encourage discussions about the features of these materials.</p> <ul style="list-style-type: none"> - What do you notice about this material? - What material do you think would be best and why? - Which material would be the worst to conduct electricity and why? - Any similarities and differences between the materials? Can you group the materials in to those you think will conduct electricity and those that won't? Can you explain why? <p>In groups design an experiment, predict, investigate and write up findings (over two lessons, <u>in books</u>). Fill in table as a support:</p> <table border="1"> <tr> <td>Equipment -</td> <td></td> </tr> <tr> <td>Method (what we will do)</td> <td></td> </tr> <tr> <td>Prediction (what we think will happen)</td> <td></td> </tr> <tr> <td>Results (what happened?)</td> <td></td> </tr> <tr> <td>Conclusion (what do we know now?)</td> <td></td> </tr> </table>	Equipment -		Method (what we will do)		Prediction (what we think will happen)		Results (what happened?)		Conclusion (what do we know now?)		<p>Challenge: What could we do differently next time? How do we make sure this is an accurate experiment? (can give scenario e.g. would it be ok to use different bulbs for each of the materials - encourage discussion around fair test).</p>	
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<p>Sess sion 5 and 6</p>	<p>I can design a circuit of my own.</p>	<p>Starter: Refer to vocab boards on working wall and discuss meaning of vocabulary</p> <p>Hooke: Mrs Corbin wants you to design some fairy lights for a Christmas tree. What will you need?</p>	<p>Mixed ability groups</p>											

		<p>Applying knowledge of circuits (Y2) and materials (Y1): Class discussion: What materials could you use to cover/surround your circuit? Which materials are opaque and which which will not let light through? Currently white lights - how do we change the colour of these lights? What materials would we use? is it safe to use any material? Refer back to electricity safety powerpoint. Teacher to model the different material options and the different ways they could add colour/pattern to the lightbulbs.</p> <p>Chn to work in small mixed ability groups: Design on sugar paper, make and test (in groups).</p> <ul style="list-style-type: none"> - Why is the light getting dimmer when you add more bulbs? - How long are your lights going to be? - How many bulbs will you use? - How will you power so many bulbs? - What happens when you add more leads? - What leads will you use and why? Does it make a difference? <p>Plenary: present lights to class and discuss what worked/what your findings were.</p> <p>Take photos for books.</p>	<p>Challenge: Is it better to use one big battery or lots of smaller batteries and why?</p>	
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Impact statements:

To be able to use appropriate scientific vocabulary.

To be able to perform simple tests.

To be able to use their observations and ideas to suggest answers to questions.

To gather and record data to help answer questions.

To be able to explain how a simple circuit works.