

## YEAR 6 ELECTRICITY PLANNING

**Class:**

**Term:**

**Subject: Science**

**Unit: Electricity**

Differentiation and support (Detailed differentiation in weekly plans.)

SEN: write up investigations on writing frames. Support from more able partners in mixed ability work. Additional adult support.

GT: provide headings for experiment sections. Encourage predictions conclusions that draw on scientific knowledge. Provide extension activities to apply their own knowledge and to research information independently

English: writing up experiments in sequence using technical language, new vocabulary, justifying predictions and explaining observations, using dictionaries and non-fiction books, listening for information in video clips, extracting information from texts

Maths: drawing results tables and bar charts, units of measurement (volts, amps, Watts and Ohms), ordering appliances by Wattage

ICT: videos on IWB, using simulations of circuits

Art and D&T: drawing diagrams of circuits, understanding why different materials are selected for different purposes e.g. as insulation or as wiring

Geography and PSHCE: learning how to stay safe around electricity, considering the social issues related to electricity e.g. sustainability and access to it, working with others

**Check Lesson 3 at the start of the unit in order to collect necessary equipment and to test the activities work with the equipment that plan on using**

To access the complete version of this [Year 6 Electricity planning](#), with every resource needed for each lesson, visit:

<http://www.saveteacherssundays.com/science/year-6/643/>

W	Learning objective	Teaching activities	Resources	Assessment: Success Criteria
1	<p>To understand what electricity is, how it is generated and how different charges interact</p> <p>(1 hour)</p>	<p>Intro:</p> <p>Ask the children to think, pair, share what they already know about the topic of electricity and what they can remember from learning about it in Year 4</p> <p>Show the children the cards from Year 4 with electricity-related vocabulary on them</p> <p>Ask the children to think, pair, share the meaning of each of the terms</p> <p>Give the children a balloon and ask them to rub it against their hair and see what effect this has on their hair</p> <p>Tell the children that we will be watching a video (the third video below) that explains why their hair stands up when they rub it with a balloon</p> <p>Watch the videos:</p> <ul style="list-style-type: none"> <li>• about the structure of an atom at <a href="https://www.youtube.com/watch?v=sRPejoNktKE">https://www.youtube.com/watch?v=sRPejoNktKE</a> (if the link does not work, Google 'Atomic structure Ricochet science') – watch up to 30 seconds</li> <li>• about what electricity is at <a href="https://www.youtube.com/watch?v=ZAFW4zdXpbY">https://www.youtube.com/watch?v=ZAFW4zdXpbY</a> (if the link does not work, Google 'What is electricity? Monkeysee)</li> <li>• about static electricity <a href="https://www.youtube.com/watch?v=fT_LmwNmVNM">https://www.youtube.com/watch?v=fT_LmwNmVNM</a> (if the link does not work, Google 'How Static Electricity Works - Stuff to Blow Your Kids' Mind #3') – watch up to 4 min 20 secs</li> <li>• about the flow of electrons at <a href="https://www.youtube.com/watch?v=VnnpLaKsgGU">https://www.youtube.com/watch?v=VnnpLaKsgGU</a> (if the link does not work, Google 'Explaining an Electrical Circuit Region 10 ESC')</li> </ul> <p>Read through part one (the first two pages) of an information text on electricity that covers:</p> <ul style="list-style-type: none"> <li>• what electricity is</li> <li>• how it is generated naturally</li> <li>• attraction and repulsion caused by positive and negative charges</li> <li>• how electricity is generated for us to use</li> </ul> <p>Ask the children if they have any questions and explain any more complex concepts if necessary</p> <p>Main:</p> <p>Children to answer comprehension questions using the information text on electricity (questions focused on science rather than English)</p> <p>Lower ability / slower working children given an answer frame; higher ability to answer in full sentences in their books</p> <p>Extension: children to answer some additional questions that require the use of higher order thinking skills</p> <p>Children can then independently research some other questions</p> <p>Plenary:</p> <p>In partners, children to compare their answers <i>without changing them</i>, and discuss any differences</p> <p>Revise the key points from the lesson and go over any questions that a number of children found difficult</p>	<p>Cards from Year 4, enlarged, laminated and cut up</p> <p>Balloons (inflated)</p> <p>Videos open and ready to play, with ads skipped and / or closed</p> <p>Information texts (add page numbers before photocopying and laminate to use again next year)</p> <p>Questions</p> <p>Answer frames</p> <p>PCS / laptops / tablets and / or non-fiction books on electricity (for second extension activity)</p>	<p>MUST: use the information about light to answer <i>some</i> of the questions correctly</p> <p>SHOULD: use the information about light to answer <i>all</i> of the questions correctly</p> <p>COULD: answer some additional questions that require the use of higher order thinking skills</p>

<p>2</p>	<p>To understand why electricity is useful and the social issues around it</p> <p>To understand how circuits work and how we use them</p> <p>To know the units of measurement related to electricity and what each of them measures</p> <p>(1 hour)</p>	<p>Intro: Ask the children to think, pair, share some of the information that we learnt in the previous lesson Read through part two (the first two pages) of an information text on electricity that covers:</p> <ul style="list-style-type: none"> <li>• why electricity is useful</li> <li>• sources and consumers of energy and electricity</li> <li>• pros and cons of different energy sources</li> <li>• circuits</li> <li>• units of measurement related to electricity</li> <li>• social problems related to electricity</li> </ul> <p>Ask the children if they have any questions and explain any more complex concepts if necessary</p> <p>Main: Children to answer comprehension questions using the information text on electricity (questions focused on science rather than English) Lower ability / slower working children given an answer frame; higher ability to answer in full sentences in their books Extension: children to independently research some other electricity-related questions e.g. what a defibrillator is and how it works</p> <p>Plenary: Go through the answers as a class, <i>without changing them</i>, and discuss any misunderstandings or points that the children were not clear on Discuss the map of global energy use per head: <ul style="list-style-type: none"> <li>• ask the children to name the places that have the highest and the lowest energy consumption per head</li> <li>• ask them what they think might be the reason for these differences</li> </ul> </p> <p>Revise the key points from the lesson</p> <p>If there is time, watch the video about electric animals at <a href="https://www.youtube.com/watch?v=-53pKGwdAQs">https://www.youtube.com/watch?v=-53pKGwdAQs</a> (if the link does not work, Google 'The Shocking Truth About Electric Animals! SciShow')</p>	<p>Information texts (add page numbers before photocopying and laminate to use again next year)</p> <p>Questions</p> <p>Answer frames</p> <p>PCS / laptops / tablets and / or non-fiction books on electricity (for second extension activity)</p>	<p>MUST: use the information about light to answer <i>some</i> of the questions correctly</p> <p>SHOULD: use the information about light to answer <i>all</i> of the questions correctly</p> <p>COULD: independently research the answers to some other questions</p>
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3a	<p>To know the unit of measurement for (electrical) power</p> <p>To be able to estimate the wattage of household appliances</p> <p>(20 mins)</p>	<p>Intro:</p> <p>Ask the children to think, pair, share some of the different units of measurement that are used in relation to electricity, and what each of these measure</p> <p>Explain that all of the electrical appliances in our homes have a wattage, and the wattage of an appliance tells us how much power is needed to operate it – the higher the wattage, the more power is needed to operate the appliance</p> <p>Ask the children if they have ever noticed the wattage of an appliance, and if they have, what the appliance was and what wattage it was</p> <p>Ask the children to think, pair, share some appliances around their homes that they think would have a low wattage, and why they think this</p> <p>Ask the children to think, pair, share some appliances around their homes that they think would have a high wattage, and why they think this</p> <p>Explain that appliances that are louder / hotter / brighter / move more, usually require more energy (although newer more energy efficient appliances may actually outperform older less energy efficient appliances, due to improvements in their design e.g. energy efficient light bulbs</p> <p>Explain that different types of the same appliance will have different wattages, and that the wattages given on the worksheet are rough averages</p> <p>Explain independent work, and clarify what each appliance is e.g. the clothes dryer is one that uses hot air, as opposed to a tumble dryer or a washing machine</p> <p>Main:</p> <p>Children to sort a range of appliances by their power consumption and match them to their wattage</p> <p>Extension: Research the wattage of some devices not on the worksheet, make a note of them and ask a partner to guess the wattage of the devices that they researched, playing 'higher or lower' until they get them right</p> <p>Can do this independently or at</p> <p>Plenary:</p> <p>Revise how we measure power consumption, especially with electricity, in Watts</p> <p>Revise how the wattage of an appliance tells us how much power it consumes</p> <p>Explain that swapping older less energy efficient items for newer more energy efficient items can help us use less electrical energy</p> <p>Explain that using the most energy-consuming appliances less can also help to do this</p> <p>Ask a child who got on to the extension to give an item that he or she found out the wattage for, but without saying the wattage</p> <p>Ask the other children to write down their estimate for the wattage of the item</p> <p>Award a team / house point to the person who is closest each time</p> <p>Repeat with some other children who got on to the extension</p>	<p>Devices / appliances with the wattage labelled on them / their packaging</p> <p>Worksheets</p> <p>Scissors</p> <p>Glue</p> <p>Computers / laptops / tablets (for extension)</p> <p>Scrap paper / pupil whiteboards and pens (for plenary)</p>	<p>MUST: understand that power consumption is measured in Watts / as wattage</p> <p>SHOULD: sort electrical appliances from lowest to highest wattage and match them to their decibel levels</p> <p>COULD: research some examples of their own</p>
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