

# STEM Years 1- 10

## Overview Year 6

### Physical Sciences, Science as a Human Endeavour, Science Inquiry Skills.

Outcome	Concept	Activity	Worksheets	Resources
<p><b>SU</b> Electrical circuits provide a means of transferring and transforming electricity. Energy from a variety of sources can be used to generate electricity <b>SHE</b> Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena</p> <p>Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives</p> <p>Scientific knowledge is used to inform personal and community decisions</p> <p><b>SIS</b> With guidance, pose questions and predict what the findings of an investigation might be.</p> <p>With guidance, plan appropriate investigation methods to answer questions or solve problems</p> <p>Decide which variable should be changed and measured in fair tests and accurately observe, measure and record data, using digital technologies as appropriate</p> <p>Use equipment and materials safely, identifying potential risks</p> <p>Construct and use a range of representations, including tables and graphs,</p> <p>Compare data with predictions and use as evidence in developing explanations</p> <p>Suggest improvements to the methods used to investigate a question or solve a problem.</p> <p>Communicate ideas, explanations and processes</p>	<p><b>Year 6</b> Electricity is the movement of tiny particles called electrons along a conductor such as wire. Electrical circuits involve sources of energy as input connected to energy convertors as outputs using electrical conductors like wires.</p> <p>Electricity is dangerous and correct safety procedures are essential. Electrical energy can be made using fossil fuel in power plants or from renewable energy sources such as solar energy from the sun or kinetic energy of wind or water.</p> <p>Design a renewable energy electricity based project.</p> <p>Robotics and automated systems need sensors for controlling movement and alarms.</p> <p>Sensors are electrical devices that convert light, sound, movement into electricity.</p>	<p>Electrical Role play- How electricity moves</p> <p>Make electrical circuits.</p> <p>Electrical dangers and safety Rules. make a poster</p> <p>Investigate Generating electricity by hand or by renewable energy sources.</p> <p><b>Projects:</b> Make a useful electrical device or energy saving device .</p> <p><b>Robotics Extension Project:</b> Make a LEGO Burglar Alarm</p>	<p>6.1 Lessons What is electricity? 6.2 Make a simple torch 6.3 Investigating electrical circuits. 6.4 Investigation- Are You Safe at Home? 6.5 Lessons Generating electricity 6.6 Investigation – Generating electricity 6.7P Design your own electrical device. 6.8P Make an energy storage car 6.9P Design an electrical energy saving House 6.10P Build a Burglar Alarm using LEGO Mindstorms 6.11 Robotics Unit 1 Slides</p>	<p>Electric Circuits kits OR Circuit components: Wires, bulbs, switches and batteries. Small DC motor</p> <p>Generators: Renewable energy kits (solar or wind generator) OR 2 DC motors connected. Small light bulb wires capacitor Solar Cell Small battery Energy measuring device (Voltmeter or energy meter)</p> <p>Energy kits – solar cells/ wind/ water generator, LEDs, capacitor or rechargeable battery, diode, battery holder.</p> <p>LEGO Mindstorms NXT or EV3 kits</p>

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<p><b>Design Technology</b></p> <p>6.2 Investigate how forces or electrical energy can control movement, sound or light in a designed product or system</p> <p>6.5 Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use</p> <p>6.8 Apply safe procedures when using a variety of materials, components, tools, equipment and techniques to make designed solutions</p> <p>6.9 Negotiate criteria for success that include consideration of sustainability to evaluate design ideas, processes and solutions</p> <p>6.10 Develop project plans that include consideration of resources when making designed solutions individually and collaboratively</p> <p><b>Digital Technology</b></p> <p>6.1 Investigate the main components of common digital systems, their basic functions and interactions and how such digital systems may connect together to form networks to transmit data</p> <p>6.5 Design a user interface for a digital system, generating and considering alternative designs</p> <p><b>Maths</b></p> <p>Interpret secondary data presented in digital media and elsewhere</p>	<p><b>Year 6</b></p> <p>Electrical circuits involve sources of energy as input connected to energy convertors as outputs using electrical conductors like wires.</p> <p>Electricity is dangerous and correct safety procedures are essential.</p> <p>Electrical energy can be made using fossil fuel in power plants or from renewable energy sources such as solar energy from the sun or kinetic energy of wind or water.</p> <p>Design a renewable energy electricity based project.</p> <p>Robotics and automated systems need sensors for controlling movement and alarms.</p> <p>Sensors are electrical devices that convert light, sound, movement into electricity</p> <p>Interpret data on renewable and non renewable energy for electricity generation</p>	<p>Make electrical circuits.</p> <p>Electrical dangers and safety Rules. make a poster</p> <p>Investigate Generating electricity by hand or by renewable energy sources.</p> <p><b>Projects:</b> Make a useful electrical device or energy saving device .</p> <p><b>Robotics Extension</b></p> <p>Learn about Robotics Control circuits. <b>Project:</b> Make a LEGO Burglar Alarm</p>	<p>6.1 Lessons What is electricity? 6.2 Make a simple torch 6.3 Investigating electrical circuits. 6.4 Investigation- Are You Safe at Home? 6.5 Lessons Generating electricity 6.6 Investigation – Generating electricity 6.7P Design your own electrical device. 6.8P Make an energy storage car 6.9P Design an electrical energy saving House 6.11 Robotics Unit 1 Slides 6.10P Build a Burglar Alarm using LEGO Mindstorms 6.5 Lessons Generating electricity</p>	<p>Electric Circuits kits OR Circuit components: Wires, bulbs, switches and batteries. Small DC motor</p> <p>Generators: Renewable energy kits (solar or wind generator) OR 2 DC motors connected. Small light bulb wires capacitor Solar Cell Small battery Energy measuring device (Voltmeter or energy meter)</p> <p>Energy kits – solar cells/ wind/ water generator, LEDs, capacitor or rechargeable battery, diode, battery holder.</p> <p>LEGO Mindstorms NXT or EV3 kits</p>