

Year 5/6 Science based unit - We have the power! (2/3 weeks)



Throughout the unit children complete the Charanga unit 'Living on a Prayer'. Children learn about electrical circuits and components and investigate what happens when components are changed. They build and explore different types of circuit. They then use these to make a working alarm.

Thinking scientifically skills	Science knowledge skills
<ul style="list-style-type: none"> • Plan enquiries, including recognising and controlling variables where necessary. • Record data and results of increasing complexity using scientific diagrams and labels. • Report findings from enquiries, including oral explanations. • Use test results to make predictions to set up further comparative and fair tests. • Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments. 	<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. • Use recognised symbols when representing a simple circuit in a diagram. <p><u>Previous Knowledge:</u> Identify common appliances that run on electricity. Identify whether or not a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators and associate metals with being good conductors. Construct working series circuits and name the basic parts of a simple electrical circuit, including cells, wires, bulbs, switches and buzzers.</p> <p><u>Previous Vocabulary:</u> Electricity simple circuit series circuit conductor insulator switch</p>

<u>Music skills</u>	<u>DT skills</u>
<ul style="list-style-type: none"> • Create songs with verses and a chorus. • Create rhythmic patterns with an awareness of timbre and duration. • Combine a variety of musical devices, including melody, rhythm and chords. • Thoughtfully select elements for a piece in order to gain a defined effect. • Use drones and melodic ostinati (based on the pentatonic scale). • Convey the relationship between the lyrics and the melody. • Use digital technologies to compose, edit and refine pieces of music. <p><u>Previous knowledge:</u> Improvise and compose music for a range of purposes using the inter-related dimensions of music. Play and perform in solo and ensemble contexts, playing musical instruments with increasing accuracy, fluency and control. Use and understand staff and other musical notations. Appreciate and understand a wide and range of high-quality live and recorded music drawn from different traditions and from great composers and musicians.</p>	<ul style="list-style-type: none"> • Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips) • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. <ul style="list-style-type: none"> • Use research and develop design criteria to inform the design of innovative functional appealing products that are fit for purpose (focus on particular group) • Use scientific diagrams to represent designs. <p><u>Previous knowledge: (Christmas card)</u> Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques. Select appropriate joining techniques. Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].</p> <p><u>Previous Vocabulary:</u> construct repair strengthen joining</p>
<p>PSHE</p> <ul style="list-style-type: none"> • Describe how to stay safe in different environments including never playing near or on railway lines and the use of electrical appliances near water <p><u>Previous knowledge: New learning</u></p>	

The more components in a circuit, the more energy will be used up, therefore more bulbs in a circuit will produce a dimmer light.

The longer the wires are in a circuit, the dimmer the bulbs will be as the electricity loses power as it moves around the circuit.

Parallel circuits will allow some electricity to flow through some parts of a circuit while other parts may remain without electricity.

(See circuit diagrams)

Water is a good electrical conductor and electrical items should never be used by water sources.

Rail way lines carry electricity and nobody should play near or on railway lines.

Never use a mobile phone while it is being charged (is plugged in).

A design brief lists the features of a product.

A prototype is the first production of a design and alterations can/should be made to the product before final production.

Materials should be selected, according to their functional properties (electrical conductivity) and aesthetic qualities.

Musical notes can be placed on or between lines on a musical staff and the numbers at the beginning of the staff will show how many beats in a bar there will be.

