

ST GEORGE'S CATHOLIC SCHOOL



# St George's Catholic School Design and Technology Curriculum Year 4

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Year 4 (duration)	Title of the unit: Static Electricity - Torches
National Curriculum Objectives /Milestones	Key vocabulary and knowledge
<p>Improve upon existing designs, giving reasons for choices.</p> <ul style="list-style-type: none"> <li>Disassemble products to understand how they work.</li> <li></li> </ul> <p>Create series and parallel circuits</p> <p>Make products by working efficiently (such as by carefully selecting materials).</p> <ul style="list-style-type: none"> <li>Refine work and techniques as work progresses, continually evaluating the product design.</li> </ul> <p>Strengthen materials using suitable techniques.</p> <ul style="list-style-type: none"> <li>Make products by working efficiently (such as by carefully selecting materials).</li> </ul> <p>Cut materials accurately and safely by selecting appropriate tools.</p> <ul style="list-style-type: none"> <li>Measure and mark out to the nearest millimetre.</li> </ul> <ul style="list-style-type: none"> <li>Apply appropriate cutting and shaping techniques that include cuts within the</li> </ul>	<p><u>Key Vocabulary</u></p> <p>evaluate, series, parallel, electricity, static, flow, charge, circuit, disassemble, select, strengthen, refine, component, wire, cell, battery, connection, connect, spring, force, charge, flow, bulb, crocodile clip , reflector, screw , mechanism</p> <p><u>Reading Non-Fiction Link :</u> Read electricity topic books from Resources for Learning and Knowledge Organiser for Electricity in Science as a resource for vocabulary.</p> <p><u>Previous learning :</u></p> <p><u>Year 3</u> Explore the science behind static electricity and apply this new knowledge to generate ideas for and make a static-electricity game. (Year 4 plans cover the Year 3 plans)</p> <p><u>Future Learning :</u> <u>Year 5</u> Learn about the development of exchanging personal messages, to the invention of the Penny Black stamp. Develop an electronic greeting card, using paper-applicable circuit components.</p> <p><u>Year Six</u> Understand what is meant by fit for purpose design and form follows function. Design and develop a steady hand game using a series circuit, including housing and backboard.</p>

perimeter of the material (such as slots or cut outs).

- Select appropriate joining techniques.
- Refine work and techniques as work progresses, continually evaluating the product design.

Choose suitable techniques to construct products or to repair items.

- Strengthen materials using suitable techniques.

Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).

#### Lesson 1

Learn how static electricity can cause objects to move though **reading**. Design a game which uses static electricity (fishing for paper fish with charged ruler).

Make the simple game (rubbing a plastic drum stick or ruler to create a charge and pick up fish cut outs in a timed period). Evaluate the game.

#### Lesson 2.

Revise how to create a simple circuit (**link to Science and reading** ).

#### Lesson 3.

Evaluate a range of torches. Disassemble and identify features (housing, reflector, circuit switch). Evaluate which is the best design and why. **Annotate** a working drawing of a torch using the correct **vocabulary**.

#### Lesson 4.

Create a torch design using learning from previous lessons. **Annotate design sketches**. Use ideas from clips below. Use spring mechanism to create force on the battery.

<https://sisj.in/blog/how-to-make-a-homemade-flashlight/>

<https://www.youtube.com/watch?v=FBuOVy4cuN4>

#### Lesson 5

Build torch design. Ensure torch works and is strengthened / refined as building by carefully selecting

#### Lesson 6

	Evaluate torch design using an evaluation sheet / template (writing task). This can be verbal.
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Year (End of Year Expectations)
<u>To be able to choose appropriate materials</u> <u>To use a spring to exert a force</u> <u>To have created series and parallel circuits</u>