

NC Purpose of Study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Intent	Implementation	Impact
At Broadway Junior School, Design and Technology inspires pupils to become creative, innovative and reflective problem-solvers. Through a progressive curriculum, children develop the knowledge, skills and confidence to design, make and evaluate purposeful products while considering the needs of others and the wider world. Pupils learn to take risks, think critically and apply technical knowledge across a range of contexts, including structures, mechanisms, textiles, electrical systems, the digital world and cooking and nutrition. We aim to foster resilience, resourcefulness and curiosity, enabling children to understand the impact of design and technology on everyday life and prepare them for future learning and careers.	Design and Technology is taught through the Kapow Primary scheme, which provides a carefully sequenced and progressive curriculum from Year 3 to Year 6. Learning follows the design process of design, make and evaluate, underpinned by the development of technical knowledge. Pupils revisit key areas throughout Key Stage 2, building on prior learning through a spiral curriculum approach. Lessons are taught over three half-terms each academic year and include practical, hands-on experiences, collaborative learning and opportunities for independent thinking. Knowledge organisers support vocabulary and knowledge retention, while differentiated activities ensure all pupils can access and achieve within the curriculum. Teachers are supported through high-quality planning and subject-specific professional development resources.	The impact of our Design and Technology curriculum is evident in pupils who are confident, creative and capable designers. Children develop a secure understanding of materials, tools, processes and healthy nutrition, applying their knowledge to create purposeful and innovative outcomes. They demonstrate increasing independence when designing, making and evaluating products and can reflect thoughtfully on how their work could be improved. Assessment is ongoing through observation, questioning and review of completed projects, enabling teachers to identify and address gaps in learning. By the end of Key Stage 2, pupils have the skills, knowledge and understanding required to meet National Curriculum expectations and succeed in the next stage of their education.

Key Vocabulary

Battery bulb buzzer circuit diagram component conductor electrical items electricity electronic item insulator series circuit switch target audience test torch wire

Knowledge	Skills
- Electrical conductors are materials which electricity can pass through. - Electrical insulators are materials which electricity cannot pass through. - A battery contains stored electricity that can be used to power products. - An electrical circuit must be complete for electricity to flow. - A switch can be used to complete and break an electrical circuit.	<u>Design</u> - Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of design ideas. <u>Make</u> - Making a torch with a working electrical circuit and switch. - Using appropriate equipment to cut and attach materials. - Assembling a torch according to the design and success criteria. <u>Evaluate</u> - Evaluating electrical products. - Testing and evaluating the success of a final product. - Suggesting modifications.

Learning Objectives/End Points

Lesson 1: Electrical products	Lesson 2: Evaluating torches	Lesson 3: Torch design	Lesson 4: Torch assembly
To learn about electrical items and how they work.	To analyse and evaluate electrical products.	To design a product to fit a set of specific user needs.	To make and evaluate a torch.

Materials	Cautions
- Electric circuit component sets - Battery 1 battery holder 3 wires 1 bulb 1 buzzer. - Equipment to make a switch 1 small cardboard rectangle 2 split pins/ 1 paper clip 1 sharp pencil and rubber	- Batteries contain harmful chemicals and should not be put in the mouth. - Batteries should be disposed of carefully. - Check the condition of batteries before they are used. - Avoid contact between water and electrical devices. - Crocodile clips pose a risk of pinched skin. - Do not form a short circuit (a loop of wire connected to the battery with no device included). - Button magnets pose a risk if swallowed so check that magnetic connectors (found in some circuit kits) are not loose.

Cross-Curricular Links
Science - Electricity - Identify common appliances that run on electricity. - Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. - 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.

Careers	
Linking Curriculum Learning to Careers Discuss how the skills developed in this unit are used in a range of careers, including: • Electrical Engineer • Electronics Engineer • Product Designer • Design Engineer • Lighting Designer • Robotics Engineer • Inventor • Manufacturing Engineer • Technician • Renewable Energy Engineer Transferable skills such as Designing products for a purpose Understanding electrical systems Problem-solving and troubleshooting, Planning and communicating ideas, Selecting appropriate materials, Testing and improving designs, Following safety procedures, Evaluating products against criteria, Creative thinking and innovation	Learning from Career and Labour Market Information • Explore how engineers, designers and scientists use knowledge of electricity, materials and circuits to create products that solve problems and meet people’s needs. • Learn that electrical products are designed with specific users in mind and that professionals consider safety, function, appearance and cost when developing products. Encounters with Employers and Employees • Explore how electrical engineers and product designers create products by combining scientific knowledge with creativity and problem-solving. • Discuss how professionals use diagrams, prototypes and testing to develop safe and effective electrical products. Experiences of Workplaces • Explore workplaces where electrical products are designed and developed, such as engineering companies, design studios, manufacturing facilities and technology workshops. • Investigate electrical products used in everyday life and discuss the design decisions behind them. • Explore how prototypes are tested and improved before becoming finished products.