Curriculum map

Subject - Design and Technology

Year Groups

Year 4

technology

Prior learning

and glue.

Designing

Making

Evaluating

project.

Key learning in design and

· Constructed a simple series electrical circuit in

Cut and joined a variety of construction materials,

such as wood, card, plastic, reclaimed materials

Gather information about needs and wants, and

develop design criteria to inform the design of products that are fit for purpose, aimed at

Generate, develop, model and communicate realistic ideas through discussion and, as

appropriate, annotated sketches, cross-sectional

Select from and use tools and equipment to cut.

Select from and use materials and components,

including construction materials and electrical

shape, join and finish with some accuracy.

components according to their functional

Investigate and analyse a range of existing

areas for improvement in their work.

Evaluate their ideas and products against their

Technical knowledge and understanding

Understand and use electrical systems in their

products, such as series circuits incorporating

Apply their understanding of computing to program

Know and use technical vocabulary relevant to the

own design criteria and identify the strengths and

properties and aesthetic qualities.

battery-powered products.

switches, bulbs and buzzers.

and control their products.

particular individuals or groups.

Order the main stages of making.

and exploded diagrams.

science, using bulbs, switches and buzzers.

Aspect of D&T

Electrical systems

Focus

Simple circuits and switches

What could children design, make and evaluate?

siren for a toy vehicle reading light noise-making toy nightlight illuminated sign torches table lamp lighting for display hands-free head lamp buzzer for school office other - specify

Project title

Design, make and evaluate a (product) (user) for (purpose)

Intended users

themselves younger children older children teenagers parents grandparents friends school general public other - specify

Purpose of products

safety and security hobbies and interests utility pleasure advertising energy saving for sale other - specify

Health and safety

Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.

Related learning in other subjects

Science – know how to construct simple series circuits and have a basic understanding of conductors, insulators and open and closed switches.

Spoken language – participate in discussion and evaluation of batterypowered products. Ask relevant questions to extend knowledge and understanding. Build their technical vocabulary.

Related learning in other subjects

- Science know how to construct simple series circuits and have a basic understanding of conductors, insulators and open and closed switches
- **Computing** design, write and physical systems.
- Spoken language asking

Related learning in other subjects

- Spoken language maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments. Develop understanding through speculating, hypothesising, imagining and exploring ideas.
- Science know how to construct simple series circuits and have a basic understanding of conductors, insulators and open and closed switches.
- Computing design, write and debug programs that accomplish specific goals, including controlling physical systems.

Possible resources

handling collection of battery-powered electrical products switches including toggle, push-to-make and pushto-break

aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, finishing materials and media

buzzers, bulbs, bulb holders, zinc carbon or zinc chloride batteries batteries, battery holders, wire, automatic wire strippers suitable control program with interface box or standalone control box right/left handed scissors, PVA glue, cutting mats

Key vocabulary

series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip

control, program, system, input device, output device

user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Investigative and Evaluative Activities (IEAs)

- Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered products, including those which are commercially available e.g. Where and why they are used? How does the product work? What are its key features and components? How does the switch work? Is the product manually controlled or controlled by a computer? What materials have been used and why? How is it suited to its intended user and purpose?
- Ask children to investigate examples of switches, including those which are commercially available, which work in different ways e.g. push-to-make, push-to-break, toggle switch. Let the children use them in simple circuits e.g. How might different types of switches be useful in different types of products?
- Remind children about the dangers of mains electricity.

Focused Tasks (FTs)

- Recap with the children how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers.
- Demonstrate how to find a fault in a simple circuit and correct it, giving pupils opportunities to practise.
- Use a simple computer control program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers.
- Ask the children to make a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. Encourage children to make switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side. Ask the children to test their switches in a simple series circuit.
- Teach children how to avoid making short circuits.

Design, Make and Evaluate Assignment (DMEA)

- Develop a design brief with the children within a context which is authentic and meaningful.
- Discuss with children the purpose of the battery-powered products that they will be designing and making and who they will be for. Ask the children to generate a range of ideas, encouraging realistic responses. Agree on design criteria that can be used to guide the development and evaluation of the children's products, including safety features.
- Using annotated sketches, cross-sectional and exploded diagrams, as appropriate, ask the children to develop, model and communicate their ideas.
- Ask the children to consider the main stages in making and testing before assembling high quality products, drawing on the knowledge, understanding and skills learnt through IEAs and FTs.
- Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.

- debug programs that accomplish specific goals, including controlling
- questions to check understanding. develop technical vocabulary and build knowledge.

	Cultural Capital	
	Visits and visitors We the curious (@Bristol) Science/DT Sixth form students from KLB Create Centre & eco home in Bristol	Experiences and events. End of project/mini outcomes Aspirations week
	Key Texts	Links https://www.data.org.uk/resource-shop/primary/7-to-9-years/alarming-vehicles-yr-456/ https://www.data.org.uk/resource-shop/primary/7-to-9-years/night-lights-links-to-literacy-yr3/ https://www.data.org.uk/resource-shop/primary/7-to-9-years/developing-handmade-switches/
	Community events and links	Global issues Eco friendly – saving electricity.
	Famous People Alessandro Volta Thomas Edison	Life Skills Making links Working relationships Eco awareness

