Year 4: Harry Potter

What should I already know?

D&T is a subject where you develop skills, knowledge and understanding to design and make functional products.	* Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. * Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design * Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Powerful Knowledge

Making secure connections

Connecting block

Twist strands of wire together

Bulb holder – Bend wire around screw in direction of turning when tightening
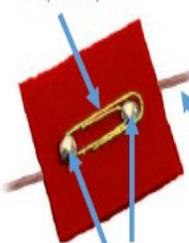
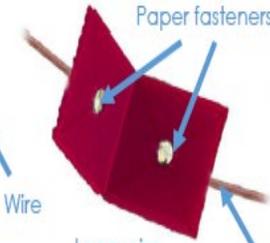Wrap ends around

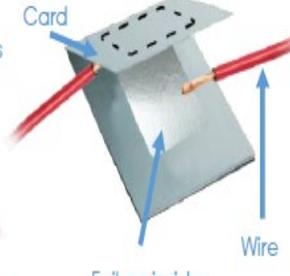Tape over with insulating tape

Handmade switches

Paperclip

Paper fasteners

Wire

Paper fasteners

Paper fasteners

Loop wire around paper fasteners

Wire

Card

Foil on inside surfaces

Wire

Commercial switches
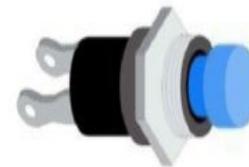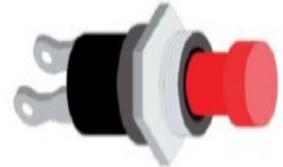
Push-to-break switch
The switch is off while the button is pushed, but returns to its 'on' position when button is released.

Push-to-make switch
When you push, the electricity flows through the circuit, but when you release it the circuit is broken and the switch is off.

Interesting facts
Daniel Radcliffe wore out 60-70 wands during the making of the *Harry Potter* films.

Glossary

Circuit	A path through which electricity passes.
Conductor	A material which allows an electric current to pass through it.
Insulator	A material which does not easily allow electric current to pass through it.
Prototype	A model made to test whether a design will work.
System	A set of related parts or components that together achieve a desired outcome.
Input devices	Components that are used to control an electrical circuit e.g. switches.
Output Devices	Components that produce an outcome e.g. bulbs and buzzers.
Push-to-make-or-break switch	A switch turned on or off by pressing it.

Design & Technology Spring 1 – Harry Potter

National Curriculum Objectives:	Prior Objectives:
- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. - Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	
Skill – Research Knowledge –	Skill - Knowledge –	Skill – Knowledge –	Skill – Knowledge -	Skill – Knowledge –	
WALT: Investigate toy wands WILF: Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. Lesson • Children are provided the 'Harry Potter' wands from our topic boxes and are asked to investigate and evaluate: *How does it look? Who are its target audience? Why would their target audience like it?* • Ask the children to analyse the wands – *What did you like about it? How can it be improved? Would it look better if you could light up the tip of the wand? Show the children this advert by Smiths Toys* https://www.youtube.com/watch?v=qwkq78OTgNw&feature=emb_title	WALT: Determine the success criteria for a switch. WILF: • Create an electrical circuit. • Use a switch to turn your circuit on and off. • Look at different ways in which a switch can operate. Lesson • 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. • 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	WALT: Design a functional and appealing product for a chosen user and purpose based on simple design criteria. WILF: Develop a design brief with the children within a context which is authentic and meaningful. Lesson • Provide the children with a WAGOLL of a finished wand. Discuss with children the purpose and user of the products they will be designing, making and evaluating. E.g. *We are going to design, make and evaluate a puppet for _____ (user) for _____ (purpose).* Use this link to show the children how you made your own wand - https://babbledabbledo.com/how-to-make-a-magic-wand/	WALT: Create a final product WILF: • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics. Lesson Having recapped on the design process, children have the chance to create their design according to the success criteria. Teacher continues to provide examples how their wand was created through each stage, which the children can look at and use as a	WALT: Evaluate our final product against the original design criteria WILF: Children evaluate their ideas throughout and their final products against original design criteria. Lesson With the class the teacher models completing a 5-point scale, This scale will evaluate the children's' product against the original design criteria and assess how they feel that they did with their final outcome. See below for an example of a 5-point scale:	

Show children the wands which light up. Ask them: *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?*
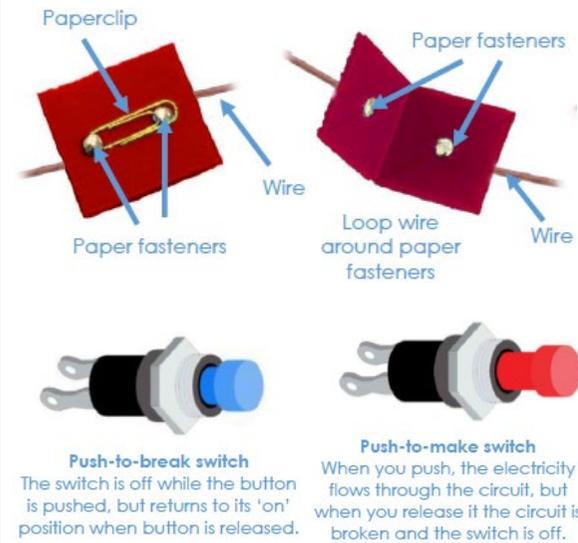
• Make drawings of existing products, stating the user and purpose. Identify and label, if appropriate, the fabrics, fastenings and techniques used.

Recording:

Photo evidence of children accessing the physical resources made available by the teacher.

Record evidence in books e.g. "Today we looked at …"

them from side to side. Ask the children to test their switches in a simple series circuit.

Paperclip
Paper fasteners
Wire
Paper fasteners

Paper fasteners
Loop wire around paper fasteners
Wire

Push-to-break switch
The switch is off while the button is pushed, but returns to its 'on' position when button is released.

Push-to-make switch
When you push, the electricity flows through the circuit, but when you release it the circuit is broken and the switch is off.

• Teach children how to avoid making short circuits.

Recording:

Children will have observed and assessed a variety of materials, giving their opinion of each material's strengths and limitations. They will also have tried different ways to join fabrics together and have come to a conclusion of which worked best for their product.

This session can be carried out over two or more lessons, depending on the time it takes to carry out both activities.

Photo evidence can be used for recording the lesson. Alternatively, children can be given a table which allows them to rate each material out of 10 for its ability to meet the purpose of using puppets

Design criteria developed with the teacher should be used to guide the development and evaluation of the children's products.

• Ask the children to generate a range of ideas e.g. *What parts will the product need to have and what will it be made from? What size will it be? How will it be joined and finished?*

• Through talk, drawings and mock-ups, ask the children to develop and communicate their ideas. Information and communication technology could be used for symmetry and pattern ideas. Choose one idea to follow through.

Recording:

Children produce a design of what they intend for their finished product to look like. Also, they can add comments on the features of their product. For example:

I am going to design, make and evaluate a wand which has an electrical circuit. It will be made for _____ (user) for _____ (purpose).

physical reminder of how their final product needs to operate. Remind the children that their final product has to match the design that they produced for it.

Beforehand, the teacher will need to provide sticks of a reasonable size for the pupils. Having each pupil prepared with the equipment required to build the wand will help the transitions between each stage of creating their design product.

Recording:

Children will have produced their final product. Discuss with them what they have produced e.g. who have you made your product for? Which kind of switch did you use to make your electrical circuit work?

Photo evidence or a QR code with a video attached can also be used.
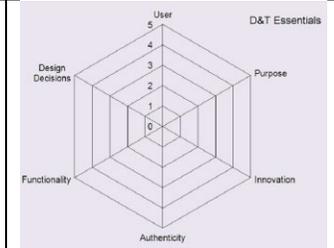
Recording:

See above. Also, teacher can create QR codes with recordings of their pupils explaining the reasons for evaluating their product as they did.

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,

Names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function.