Y4 Design Technology – Electrical Circuits
Design Brief – To make a torch with an on/off switch

Essential Knowledge

What are the features of a torch and how does it work?
A torch is a handheld electrical device, which is battery powered and that gives off light.
A torch needs to have an outer casing, include an electrical circuit, have a switch and a source of power e.g. a battery.

What materials will you use and what will it look like?
The lens of a torch needs to be made of clear plastic for the light to shine through and it also needs to protect the bulb. The main body of the torch needs to be a stable, insulator material that can hold the electrical components.

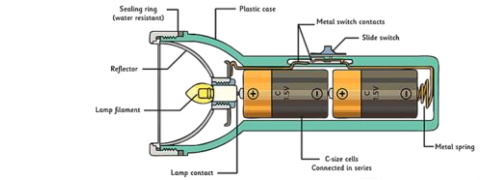
How will you a design a torch with a switch?
The torch needs to be designed using a design criteria. The switch needs to be tested and then designed using the successful prototype.

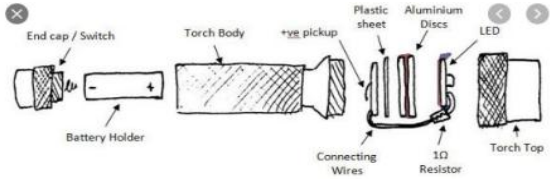
What steps are you going to follow to make your torch?
The torch needs to be made using the steps provided and shown by the class teacher. The steps need to be followed carefully to make sure everyone stays safe.

Did your torch work and what went well with your finished product?
The torch needs to be evaluated using the questions:
- What worked well?
- What did not work well?
- What would you change next time?

Key Vocabulary

case	a tube that houses the parts of the flashlight
bulb	changes electricity into light
switch	this makes or breaks the electrical circuit turning the light on and off
reflector	plastic coated in shiny aluminium that goes around the light bulb to redirect the light rays and form a steady beam of light
lamp	the light source
lens	clear plastic that goes in front of the bulb to protect it
batteries	the power source for the torch





Aspirational Knowledge and Skills

The children must be able to find the fault by checking the circuit.
The children know how to design and choose the most appropriate switch for their torch.

Project Process

Y4 Design Technology – Electrical Circuits
Design Brief – To make a torch with an on/off switch

Key Knowledge

How does a torch work?
A torch is a handheld electrical device, which is battery powered and that gives off light.

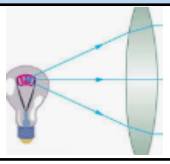
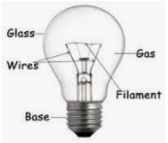
What will you use to make your torch?
A torch needs to have:
- An outer casing
- Include an electrical circuit.
- Have a switch.
- A source of power e.g. a battery.

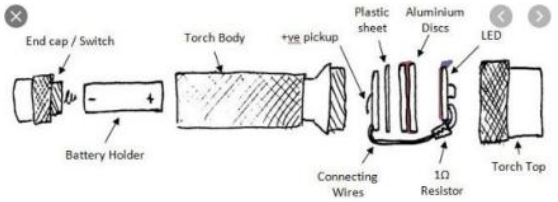
How will you design a torch with a switch?
The torch needs to be designed using a design criteria.
The switch needs to be tested and then made.

How do you make a torch?
1. Cut a bottle in half.
2. Make a simple circuit.
3. Place the bulb through the neck of the bottle.
4. Place the wires, battery and bulb into the bottle.
5. Connect the wire to the switch.
6. Stick the components to the bottle.
7. Fix the lens onto the end of the bottle.
8. Check that your torch works.

Did it work and what went well with your finished product?
The torch needs to be evaluated using the questions:
Did the torch work?
Does it look like you planned?
Would you change anything?

Key Vocabulary

lens		clear plastic that goes in front of the bulb to protect it
reflector		aluminium sheet around the light bulb to direct the light rays and form a beam of light
bulb		changes electricity into light
cell (battery)		the power source for the torch
case		a tube that houses the parts of the flashlight



Project Process

Y4 Design Technology – Healthy Eating
Design Brief – Making Plain and Cheese Scones

Essential Knowledge

What is a healthy and varied diet?
We need to eat a range of foods from each food group. The Eatwell Guide tells us how food we should be eating from each group.

What is a scone?
A **scone** is a small, round bread-like cake that is soft and slightly sweet. It is often baked and eaten as a snack or part of a special tea. Scones can be plain or have things like raisins, cheese or fruit inside.

What steps do you follow to make a scone?
We will use the recipe for cheese scones and adapt it for plain or fruit scones. Before we start cooking, we must ensure that all surfaces and our hands are clean.

Project Process

Recipe for Cheese Scones

Ingredients
120g self-raising flour
½ tbs caster sugar
25g butter or baking fat/block
25g hard cheese
A pinch of salt
75ml semi-skimmed milk

Equipment
Non-stick baking tray, pastry brush, weighing scales, sandwich bag, measuring spoons, grater, chopping board, measuring jug, flour dredger, rolling pin, scone cutter, cooling rack.

Method
1. Preheat oven to 220°C or gas mark 7.
2. Grease or line the baking tray.
3. Place the flour, sugar, salt and butter into the sandwich bag.
4. Rub the ingredients in the sandwich bag until it resembles breadcrumbs.
5. Stir in the cheese.
6. Open the bag and carefully pour in the milk. (Save just a little of the milk).
7. Mix to form a soft dough.
8. Place the dough on a lightly floured work surface or the outside of the sandwich bag.
9. Roll out the dough to about 1½cm thick.
10. Shape the scones using a cutter.
11. Place the scones on a baking tray and brush each top with a little milk.
12. Bake for 12 – 15 minutes, until golden brown.
13. Allow to cool on a cooling rack.

Key Vocabulary

good nutrition	food that is necessary for health and growth
varied	a combination of different things e.g. different types of foods
ingredients	foods that we combine to create a particular dish
recipe	a set of instructions that tell us how to create a dish
techniques	different skills
seasonality	in season e.g. strawberries grown in the summer

The Eatwell Guide

Aspirational Knowledge and Skills

We can cook sweet or savoury scones.
We change the taste of scones by altering the ingredients.

Y4 Design Technology – Healthy Eating
Design Brief – Making Plain and Cheese Scones

Key Knowledge

What is a healthy and varied diet?
We need to eat a range of foods from each food group so we can be healthy.

What is a scone?
A **scone** is a small, round bread-like cake that is soft and slightly sweet.

What steps do you follow to make a scone?
We will use the recipe for cheese scones and change it for plain or fruit scones. Before we start cooking, we must ensure that all surfaces and our hands are clean.

The Eatwell Guide

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13. Allow to cool on a cooling rack.

Key Vocabulary

ingredients		foods that we combine to create a particular dish
recipe		a set of instructions that tell us how to create a dish
techniques		different skills that we use to make something

Project Process

Y4 Design Technology – Mechanisms: Levers
Design Brief – Can you make a card with moving parts?

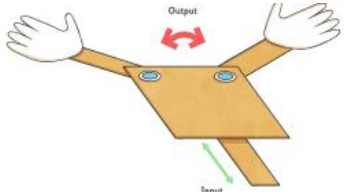
Essential Knowledge

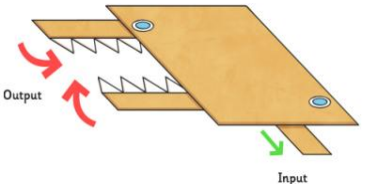
What are levers and linkages?
A mechanical system is a set of parts that make something move. Levers and linkages are an example of a mechanical system and can be used to create different motions.

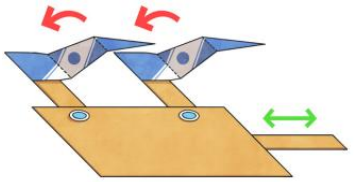
How can you plan to use levers and linkages in a celebration card?
The card needs to be designed so that it has a moving lever that is integrated into the card design. The linkages can be hidden or visible. The lever can use a bridge to secure it if it is needed.

What steps will you follow to make your moving picture?
The card needs to be made using the following steps:
1. Make the lever using split pins.
2. Draw the design on the card, leaving space for the moving part.
3. Draw the moving part.
4. Add the moving part to the card.
5. Check that the moving card works.

What went well with your project?
The card needs to be evaluated using these questions:
1. What was the aim of our DT project?
2. What worked well?
3. What challenges did we face?
4. How did you deal with these challenges?
5. What would you change next time?







Aspirational Knowledge and Skills

Rotary motion is turning round in a circle, e.g. a wheel.
Linear motion is moving in a straight line, e.g. a paper trimmer.
Reciprocating motion is moving backwards and forwards, e.g. a saw.
Oscillating motion is swinging from side to side in an arc, e.g. a pendulum on a clock.

Key Vocabulary

lever	the simplest type of mechanism a lever is a stiff bar which moves around a pivot
linkage	the part of the mechanism used to join one or more levers to produce the type of movement required
pivot	to turn on a central point
bridge	a short card strip used to keep lever and linkage mechanisms in place and control movement
input	the movement of the main lever by the user
output	the movement that is made by the smaller levers

Project Process

Y4 Design Technology – Mechanisms: Levers
Design Brief – Can you make a card with moving parts?

Key Knowledge

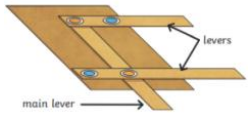
What are levers and linkages?
A mechanical system is made of parts that work together to make things move. Levers and linkages are types of mechanical systems. They help things move in different ways.

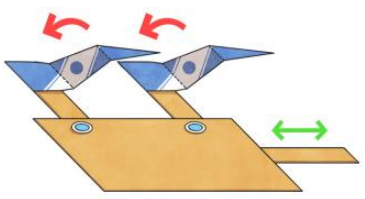
How can you use levers and linkages?
The card needs to be designed so that it has a moving lever. The linkages can be hidden or visible. The lever can use a bridge to secure it if it is needed.

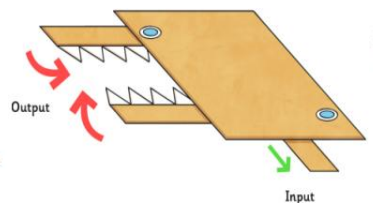
What steps will you follow to make your moving picture?
The card needs to be made using the following steps:
1. Make the lever using split pins.
2. Draw the design on the card, leaving space for the moving part.
3. Draw the moving part.
4. Add the moving part to the card.
5. Check that the moving card works.

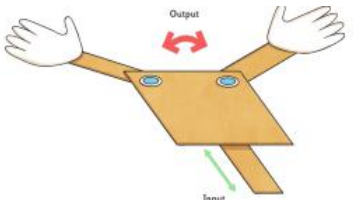
What went well with your project?
The card needs to be evaluated using these questions:
- What worked well?
- What challenges did we face?
- What would you change next time?

Key Vocabulary

lever		a lever is a stiff bar which moves around a pivot
linkage		the part of the mechanism used to join one or more levers to produce the type of movement required
bridge		a short card strip used to keep the lever and linkage mechanism in place and control movement







Project Process