



Year 4: Design and Technology



Block 1 – textiles

Fastenings

Prior learning – In year 3, children learned that when two edges of fabric have been joined together it is called a seam. They understood that is important to leave space on the fabric for the seam. They know that some products are turned inside out after sewing so the stitching is hidden.

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<ul style="list-style-type: none"> Identify the features, benefits and disadvantages of a range of fastening types. Write design criteria and design a sleeve that satisfies the criteria. Make a template for their book sleeve. Assemble their case using any stitch they are comfortable with. 	<ul style="list-style-type: none"> To know that a fastening is something that holds two pieces of material together. To know that different fastening types are useful for different purposes. To know that creating a mock-up (prototype) of their design is useful for checking ideas and proportions. 	<ul style="list-style-type: none"> Writing design criteria for a product, articulating decisions made. Designing a personalised book sleeve. Making and testing a paper template with accuracy and in keeping with the design criteria. Measuring, marking and cutting fabric using a paper template. Selecting a stitch style to join fabric. Sewing neatly using small regular stitches. Incorporating a fastening to a design. Testing and evaluating an end product against the original design criteria.

Next steps

In year 6 the children will begin to learn about

- Designing slippers in accordance with a specification and design criteria to fit a specific theme.
- Annotating designs.
- Using a template when pinning panels onto fabric.
- Marking and cutting fabric accurately, in accordance with a design.
- Sewing a strong running stitch, making small, neat stitches and following the edge.
- Tying strong knots.
- Decorating a waistcoat – attaching objects using thread and adding a secure fastening.
- Learning different decorative stitches.
- Sewing accurately with even regularity of stitches.
- Evaluating work continually as it is created.

Important subject vocabulary

Aesthetic – appreciation of something beautiful

Assemble – join together

Book sleeve – a cover for a book

Design criteria - the goals we must achieve to make our plan successful

Fabric – materials such as cotton, felt, polyester

Fastening – a way to temporarily join two pieces of fabric

Mock up – a practice prototype
 Nets - – a 3d shape drawn as a 2d shape that can be made into a 3d shape
 Running stitch – in and out sewing (see pouches year 2 for a refresher if needed)
 Target audience – who are you making this for? What will they need from a book cover?

Block 2 – Electrical systems

Torches

Prior learning – In year 3 the children made an electrical poster. They understood that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. They discovered the common features of an electric product (switch, battery or plug, dials, buttons etc.) They could list examples of common electric products (kettle, remote control etc.) They understood that an electric product uses an electrical system to work (function).

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<ul style="list-style-type: none"> Identify electrical products and explain why they are useful. Help to make a working switch. Identify the features of a torch and how it works. Describe what makes a torch successful. Create suitable designs that fit the success criteria and their own design criteria. Create a functioning torch with a switch according to their design criteria. 	<ul style="list-style-type: none"> To understand that electrical conductors are materials which electricity can pass through. To understand that electrical insulators are materials which electricity cannot pass through. To know that a battery contains stored electricity that can be used to power products. To know that an electrical circuit must be complete for electricity to flow. To know that a switch can be used to complete and break an electrical circuit. 	<ul style="list-style-type: none"> Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. 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. Evaluating electrical products. Testing and evaluating the success of a final product.

Next steps

In year 5 the children will begin to learn:

- To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record.
- To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.
- To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.

Important subject vocabulary

Battery – a source of power

Bulb - a device to convert electricity into light

Buzzer – makes a sound when connected to energy

Cell – an electrochemical unit

Component – part of a machine or vehicle

Copper – a red/brown metal

Electricity – a form of energy

Insulator – a substance that does not allow the transfer of heat or sound

Series circuit – the path along which a current of electricity flows

Switch – a device for making or breaking an electrical circuit

Block 3 – Food – special day

Prior learning – In year 3 the children found out about seasonal food. They know that not all fruits and vegetables can be grown in the UK and that climate affects food growth. They know vegetables and fruit grow in certain seasons. They are beginning to know that are known as a ‘recipe’ and know that imported food is food that has been brought into the country.

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<ul style="list-style-type: none"> • Follow a recipe, with some support. • Describe some of the features of a biscuit based on taste, smell, texture and appearance. • Adapt a recipe by adding extra ingredients to it. • Plan a biscuit recipe within a budget. • 	<ul style="list-style-type: none"> • To know that the amount of an ingredient in a recipe is known as the ‘quantity’. • To know that it is important to use oven gloves when removing hot food from an oven. • To know the following cooking techniques: sieving, creaming, rubbing method, cooling. • To understand the importance of budgeting while planning ingredients for biscuits. 	<ul style="list-style-type: none"> • Designing a biscuit within a given budget, drawing upon previous taste testing. • Following a baking recipe. • Cooking safely, following basic hygiene rules. • Adapting a recipe. • Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of products. • Suggesting modifications.

Next steps

In year 5 the children will learn:

- To understand where meat comes from – learning that beef is from cattle and how beef is reared and processed, including key welfare issues.
- To know that I can adapt a recipe to make it healthier by substituting ingredients.
- To know that I can use a nutritional calculator to see how healthy a food option is.
- To understand that ‘cross-contamination’ means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.

Important subject vocabulary

Budget – an amount of money – do not overspend

Cooling rack – a wire rack to place hot food that you want to cool down

Creaming – blending sugar and butter to a smooth consistency

Prototype – testing out an idea before the final version in order to improve it.

Quantity – an exact amount

Rubbing – using your hands to combine ingredients

Sieving – passing flour through very small holes to remove the lumps.

Block 4 – Structures Pavilions

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<ul style="list-style-type: none"> • Prior learning: In year 3 children discovered that wide and flat based objects are more stable and the importance of stiffness in structures. They learned that the front of a structure is known as a façade. 		
<ul style="list-style-type: none"> • Produce a range of free-standing frame structures of different shapes and sizes. • Design a pavilion that is strong, stable and aesthetically pleasing. • Select appropriate materials and construction techniques to create a stable, free-standing frame structure. • Select appropriate materials and techniques to add cladding to their pavilion. 	<ul style="list-style-type: none"> • To understand what a frame structure is. • To know that a ‘free-standing’ structure is one that can stand on its own. • To know that a pavilion is a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. 	<ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. • Creating a range of different shaped frame structures. • Making a variety of free-standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and for the cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials.
<p><u>Next steps</u> In year 5 the children will learn about bridges in order to:</p> <ul style="list-style-type: none"> • To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on their properties. • To understand the material (functional and aesthetic) properties of wood. 		
<p><u>Important subject vocabulary</u> Aesthetic – when something looks pleasing Cladding – a coating or covering on a structure Frame structure – consists of different parts like a ladder or tent Pavilion – a decorative building or structure of leisure Reinforce – make stronger</p>		