



Year 3: Design and Technology



Block 1- Textiles

Cross stitch and applique - Cushions

- **Prior learning** – In year 1, children have understood that that ‘joining technique’ means connecting two pieces of material together. They have used various temporary methods of joining fabric by using staples, glue or pins. They understand that different techniques for joining materials can be used for different purposes.
- In order to prepare them for this unit, children should be shown how to thread needles and tie a knot. They may benefit from practicing a running stitch (please see year 2 pouches lesson 1)

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<ul style="list-style-type: none"> • Use a cross-stitch to join two pieces of fabric together. • Design and cut the template for a cushion. • Use cross-stitch and appliqué to decorate a cushion face. • Make a cushion that includes appliqué and cross-stitch. 	<ul style="list-style-type: none"> • To know that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric. • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden. 	<ul style="list-style-type: none"> • Designing and making a template from an existing cushion and applying individual design criteria. • Following design criteria to create a cushion. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with stuffing and sewing the edges. • Evaluating an end product and thinking of other ways in which to create similar items.

Next steps

In year 4 the children will begin to learn about fastenings:

- 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.

Important subject vocabulary

Appliqué – fabric sewn on to make a picture or pattern

cross-stitch – a stitch formed with two stitches crossing each other

design - a plan or drawing to show how something will work

equipment – items needed to create something such as scissors, needles

fabric - materials such as cotton, polyester, felt

patch – to cover up a whole in a fabric

running stitch – sewing in and out to join two pieces together

thread – long thin strand of cotton to go through the needle and make stitches with.

Seam – where two pieces of fabric are sewn together

Texture – how something feels

Knot – tying and wrapping threads together.

Block 2 – Structures

Making a castle

Prior learning – In year 2 the children made a chair. They made a a structure according to design criteria, whilst creating joints and structures from paper/card and tape. They built a strong and stiff structure by folding paper. The children explored the features of structures and compared the stability of different shapes. Finally they tested the strength of their own structures and identified the weakest part of a structure.

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<ul style="list-style-type: none"> • Draw and label a simple castle that includes the most common features. • Recognise that a castle is made up of multiple 3D shapes. • Design a castle with key features which satisfy a given purpose. • Score or cut along lines on the net of a 2D shape. • Use glue to securely assemble geometric shapes. • Utilise skills to build a complex structure from simple geometric shapes. • Evaluate their work by answering simple questions. 	<ul style="list-style-type: none"> • To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse – and their purpose. • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. 	<ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes. • Designing and/or decorating a castle tower on CAD software. • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs.

Next steps

In year 4 the children will begin to make pavilions and will consider:

- 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.

Important subject vocabulary

- Castle – a large building (often from the medieval period) with special features such as moats, thick walls, turrets
- Key features – something that makes it a castle, such as: towers battlements, thick walls, a moat, a drawbridge, etc. internal features - such as a well, large stores to guard against siege, a hall for everyone to socialise.
- Stiff – not flexible
- Stable – steady
- Nets - – a 3d shape drawn as a 2d shape that can be made into a 2d shape
- Shapes – circles, squares, triangles
- 3d – cube, cuboid, pyramid, cylinder, sphere

Block 3 – Food – special day

Eating seasonally

Prior learning – In year 2 the children make a healthy wrap. They designed a healthy wrap based on a food combination which works well together. They learned to slice food safely using the bridge or claw grip. They constructed a wrap that meets a design brief. They described the taste, texture and smell of fruit and vegetables. They taste tested food combinations and final products and finally they described the information that should be included on a label.

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<ul style="list-style-type: none"> • Explain that fruits and vegetables grow in different countries based on their climates. • Understand that ‘seasonal’ fruits and vegetables are those that grow in a given season and taste best then. • Know that eating seasonal fruit and vegetables has a positive effect on the environment. • Design their own tart recipe using seasonal ingredients. • Understand the basic rules of food hygiene and safety. • Follow the instructions within a recipe. 	<ul style="list-style-type: none"> • To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a ‘recipe’. • To know that imported food is food that has been brought into the country. 	<ul style="list-style-type: none"> • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. • Knowing how to prepare themselves and a workspace to cook safely in, learning the basic rules to avoid food contamination. • Following the instructions within a recipe. • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.

Next steps

- In year 4 the children will learn:
- 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.

Important subject vocabulary

Climate – long term weather pattern of an area: Dry, Mediterranean, polar, tropical, temperate.

Imported – goods coming from elsewhere into our country

Exported – goods sent from our country elsewhere

Nationality – the nation you belong to (eg: Austrian or French)

Nutrients – the essential part of food necessary for life and growth.

Recipe – how to make a food dish

Block 4 – Electrical systems

Electrical poster

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<p>Prior learning: This is the first unit where children will learn about electrical systems. This is not taught in KS1. The children have begun to learn about Iron Age during history lessons.</p>		
<ul style="list-style-type: none"> • Explain what ‘information design’ is and understand its impact, considering what could happen if we had no signage, posters, or written communication in public places of interest. • Research and choose a specific Iron Age topic on which to base their initial poster ideas. • Complete design criteria based on a client’s request. • Roughly sketch four initial poster ideas, indicating where a bulb will be located for each. • Review their initial ideas against the design criteria and peer feedback, developing a final design. • Assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration. • Acknowledge, with a brief explanation, the need to mount the poster using corrugated card. • Test that the simple circuit works by adding a battery. • Evaluate their electric posters in a letter to a client. 	<ul style="list-style-type: none"> • To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. • To understand common features of an electric product (switch, battery or plug, dials, buttons etc.) • To list examples of common electric products (kettle, remote control etc.) • To understand that an electric product uses an electrical system to work (function). • To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits. 	<ul style="list-style-type: none"> • Carrying out research based on a given topic (e.g. The Iron Age) to develop a range of initial ideas. • Generating a final design for the electric poster with consideration for the client’s needs and design criteria. • Planning the positioning of the bulb (circuit component) and its purpose. • Mounting the poster onto corrugated card to improve its strength and withstand the weight of the circuit on the rear. • Measuring and marking materials out using a template or ruler. • Fitting an electrical component (bulb). • Learning ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge). • Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the design criteria and justifying opinions. • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.
<p><u>Next steps</u> In year 4 the children will look at torches in order to:</p> <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. 		
<p><u>Important subject vocabulary</u> Information design – presenting information in a clear and attractive way. Design criteria - the goals we must achieve to make our plan successful Research – gathering information about a subject Initial ideas – a mind map or other technique for gathering the first thoughts about an idea. Sketch – a quick drawing of an idea. Bulb – a device to convert electricity into light</p>		

Electrical system – equipment that carries electricity

Circuit – a movement that starts and ends in the same place.

Circuit component – equipment that allows the movement of the circuit - resistors, transistors, capacitors and the inductors and diodes connected by wires which are conductive