

# Design Technology Overview

Design Technology is structured to provide an inspiring and practical scheme that will engage, inspire and develop our children's creativity and imagination. The children will be enabled to design and make products that solve real and relevant problems within a variety of contexts. Making links with other areas of the curriculum, children will draw upon and use skills learnt in other subject areas like maths, science, computing and art.

In key stage 1 and 2, our coverage meets the aims and expectations set out in the National Curriculum with key skills being taught over a 2-year cycle. The units will cover a variety of themes including: nutrition, textiles, structures and mechanisms.

The teaching of Design Technology is predominantly skills based, with each unit using a similar structure of developing, planning and communicating ideas before working with tools, equipment, materials and components to create their own product to finally evaluating processes and products. In the Early Years, design technology is taught through a carefully thought out and well-resourced continuous provision and the learning experiences and opportunities provided.

The skills, knowledge and vocabulary relating to Design Technology is revisited and built upon throughout all units and a clear progression can be seen through our children's design technology journey.

## EYFS

The EYFS framework is structured very differently to the National Curriculum as it is organised across seven areas of learning rather than subject areas. We continuously use our understanding of child development and skill progression, baselines, observations and assessments to identify and review our children's strengths and gaps. This knowledge, along with the Educational Outcomes and Early Learning Goals within the Statutory Framework, drives our provision, learning environment and tailors our curriculum to the children's needs.

Expressive Arts and Design within the early years supports the children's imagination and creativity by providing regular opportunities to engage and explore with a wide range of media and materials. Enabling our children to safely use different tools and techniques and to be able to explain the processes they have used to create their own masterpieces. EAD also forms close links with music and communication/language as children are encouraged to be imaginative, to retell stories and recount narratives as well as have an extensive repertoire of nursery rhymes and songs. All of this is provided through our continuous provision to engage children's interest, curiosity, thinking and learning through play and adult focus tasks.

## Key Stage 1

Design Technology is taught over a 2-year cycle in Key Stage 1. In both cycles we cover three units per year a nutrition unit is taught first followed by a structures/mechanisms unit and finally a textiles unit.

### Cycle 1

In cycle 1 children will be focusing on food looking at nutrition with regards to fruit and vegetables in order to make their own smoothies. For this unit children will learn the difference between fruit and vegetables, they will also explore which fruits and vegetables combine well by texture and taste. They will be taught where and how fruit and vegetables grow and how to chop fruit and vegetables safely. Finally, children will learn how to describe the appearance, smell and taste of fruit and vegetables and will know the taste combinations in order to evaluate the overall taste of their own smoothies.

Within the Spring term they will look at structures and learn how to make a windmill using a clear design criteria, including individual preferences and requirements. They will be taught how to make stable structures from card, tape, glue and follow instructions to cut and assemble the supporting structure of a windmill. Children will also learn how to make functioning turbines and axles which are assembled into a main supporting structure. They will then evaluate their windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't, suggesting points for improvement.

Moving onto Textiles in the Summer term, where they will be taught how to use a template in order to design a puppet. They will also learn how to cut fabric neatly, the joining methods and sequence of steps that they need to follow in order to construct their puppet. Finally, they will evaluate their work, by reflecting on their finished piece stating what they like and dislike.

### Cycle 2

In cycle 2 children in key stage one will focus on nutrition with regards to a balanced diet, where they will learn about the nutritional information found on packaging, the five food groups and which foods combine appropriately according to their properties. They will then learn how to design a healthy wrap based on food combinations. The children will be taught how to slice food safely using the bridge or claw grip and how to construct a wrap that meets the design brief. They will then evaluate their wraps by conducting a taste test, creating a label and describing the foods they have used.

Then for the mechanisms unit children will learn how to make a moving monster by firstly creating a class design criteria then selecting a suitable linkage system to produce the desired motions. They will also learn how to design a wheel and how to select the appropriate materials depending on their properties. By experimenting with linkages adjusting the widths, lengths and thicknesses of the card used, children will learn how to create linkages levers and use split pins for pivots. Children will also be taught the skills needed to cut and assemble the components neatly, how to select the materials according to their characteristics and finally how to follow a design brief. They will then evaluate, test and adapt their designs against the design criteria and use peer feedback to modify their monster designs.

In the Summer term they will learn how to design a pouch, where they will revisit using templates when choosing and cutting their fabric. They will be taught how to thread a needle and how to decorate their pouch using fabric glue or a running stitch. Finally, they will build on their evaluation skills by discussing the quality of stitching on their peers work and discuss as a class their success of stitching against the success criteria.

### **Lower Key Stage 2**

As in KS1, DT is taught over a 2-year cycle in Lower Key Stage 2, progressing the children's knowledge of design technology through textiles, nutrition and finally building structures/mechanisms.

### Cycle 1

In cycle 1, children will look at designing and making a template from an existing cushion and applying individual design criteria. They will then follow the design criteria in order to create a cushion, through selecting and cutting fabrics with fabric scissors. They will learn how to sew using cross stitch to join the fabric together and how to decorate using applique, completing design ideas with stuffing and sewing of the edges. Then finally evaluating an end product and thinking of other ways in which to create similar items.

The next unit will focus on designing a stable pavilion structure that is aesthetically pleasing and select materials to create a desired effect. They will build frame structures designed to support weight and create a range of different shaped frame structures. They will have the opportunity to make a variety of free-

standing frame structures of different shapes and sizes. Selecting appropriate materials to build strong structures and for the cladding, reinforcing the corners to strengthen a structure. Children will learn how to create different textural effects with materials before finally evaluating structures made by the class, describing what characteristics of a design and construction made it the most effective.

Within the Summer term LKS2 will look at seasonal foods starting off with knowing that each fruit and vegetable gives us certain nutritional benefits, also knowing that the climate affects food growth and that fruits and vegetables grow in different seasons. Children will be taught how to prepare food themselves and create a work space to cook safely in, learning the basic rules to avoid food contamination. They will learn how to follow the instructions within a printed recipe, establishing and using design criteria to help test and review seasonal tarts.

### Cycle 2

In cycle 2 during Autumn, children will first look at designing a personalised book sleeve, they will write a design criteria for the product and be able to articulate their decisions made. They will be making and testing a paper template with accuracy and in keeping with the design criteria. Children learn how to carry out measuring, marking and the cutting of fabric whilst using a paper template. They will be taught how to select a stitch style to join the fabric, working neatly sewing small neat stitches. Finally they will look at testing and evaluating an end product against the original design criteria.

Within the Spring term children will design a toy which uses a pneumatic system they will first create design criteria from a design brief by generating ideas using thumbnail sketches and exploded diagrams. They will also learn that different types of drawings are used in design to explain ideas clearly. Children will be taught how a pneumatic system creates a desired motion and also how to build a secure housing for their pneumatic system. They will learn how to manipulate materials to create different effects by cutting, creasing, folding and weaving and evaluate their work using the views of others to improve their designs.

For the Summer term children will be able to design a biscuit within a given budget, drawing upon previous taste testing. They will be taught how to follow a baking recipe, how to cook safely and follow basic hygiene rules. They will also look at adapting a basic biscuit recipe by adding additional ingredients and finally evaluate the recipe, considering: taste, smell, texture and appearance using own modified recipe. Children will be taught how to describe the impact of the budget on the selection of ingredients and suggest modifications to the finished product.

## **Upper Key Stage 2**

As in KS1 & LKS2, DT is taught over a 2-year cycle in Upper Key Stage 2, progressing the children's knowledge of design technology through textiles, building structures/mechanisms and finally nutrition.

### Cycle 1

In cycle 1 during the Autumn Term children will take part in a textiles unit where they will design a stuffed toy considering the main component shapes required also creating an appropriate template and considering proportions of the individual components. They will be taught how to create a 3D stuffed toy from a 2D design by measuring, marking and cutting fabric accurately and independently. They will be able to create strong and secure blanket stitches when joining fabric and use applique to attach pieces of fabric for decoration. For the evaluation of their work they will test the end product and give points for further improvements.

During the Spring term in cycle 1 children will be taught a structures unit where they will design a stable structure that is able to support weight. They will be taught how to create a frame structure with focus on triangulation, also making a range of different shaped beam bridges. They will be using triangles to create

truss bridges that span a given distance and supports a load Independently. Children will learn how to select appropriate tools and equipment for particular tasks, using the correct techniques to saw safely. They will be taught how to identify where a structure needs reinforcement and how to use card corners for support, learning how to adapt and improve their own bridge structure by identifying points of weakness and reinforcing them as necessary. Also evaluating by suggesting points for improvements for own bridges and those designed by others.

Finally during the Summer term children will be adapting a traditional recipe (Spaghetti Bolognese), understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. They will write an amended method for a recipe to incorporate the relevant changes to ingredients, children will also be taught how to design appealing packaging to reflect a recipe. They will learn how to cut and prepare vegetables safely, use equipment safely, including knives, hot pans and hobs, also know how to avoid cross-contamination when cooking. Finally they will learn how to identify the nutritional differences between different products and recipes also identifying and describing the health benefits of all food groups (carbohydrates, fats, fruits and vegetables, dairy, protein).

## Cycle 2

In cycle 2 during the Autumn term children will design a waistcoat in accordance to specification linked to a set of design criteria to fit a specific theme. They will be taught how to use a template, pinning panels onto the fabric, marking and cutting fabric accurately, in accordance with a design. Children will then sew a strong running stitch, making small, neat stitches and following the edge, also ensure they are tying strong knots. They will then decorate their waistcoat - attaching objects using thread and adding a secure fastening, evaluating their work continually as it is created.

In the Spring term children will first experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement. They will be taught how linkages change the direction of a force, by making things move at the same time. Children will develop a range of skills such as measuring, marking and checking the accuracy of the jelutong and dowel pieces as required. Children will develop their knowledge and understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. They will also need to select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set. After creating their project they will need to evaluate the work of others and receive feedback on own work, applying points of improvements.

During the Summer term children will learn how to write a recipe, explaining the key steps, methods and ingredients, including facts and drawings from research undertaken. They will then be taught how to follow a recipe, including using the correct quantities of each ingredient and adapt their recipe based on research. They will be working to a given timescale as specified within recipe design and learn how to work safely and hygienically with independence. Finally they will evaluating their recipe, considering: taste, smell, texture and origin of the food group. They will also be taste testing and scoring final products, suggesting and writing up points of improvements and evaluating health and safety in production to minimise any cross contamination.