

## **Design and Technology**

Design and Technology plays a vital role in developing children's creativity and in encouraging them to think about important issues. DT helps to nurture creativity and innovation through design and by exploring the designed and made world in which we all live. Design and Technology education enables children to develop skills and knowledge in design, mechanisms, materials, structures and electrical control. As part of this we encourage children to be creative, innovative, confident and brave in order for them to develop the skills and understanding they will need to make important contributions to our future world.

### **Aims**

The national curriculum for design and technology aims to ensure that all pupils learn and develop practical and creative skills to allow them to confidently participate successfully in an increasingly technological world. Pupils are inspired to develop and apply their knowledge, understanding and skills through designing and making high quality products for a wide range of users. Pupils are encouraged to evaluate, test and reflect upon their own and others' ideas and products. Learning how to cook is also part learning in DT which involves developing understanding of principles of nutrition.

### **Early Years Foundation Stage**

Children begin to use and develop the physical, practical, discussion and exploration skills needed to succeed in DT. As part of this children are provided with the opportunity to explore and develop their skills through focus activities and continuous provision. Foundation Stage children are encouraged to:

- Explore a range of tools and how to use them safely
- Begin to think about the materials needed for a task, to look at some made products and to name some materials
- Talk about what they like or don't like about their own or others work and begin to explain why
- Begin to recognise problems and consider ways to overcome them
- Explore foods they like, don't like, talk about which are healthy or unhealthy and to learn skills involved with baking

## Key Stage 1

Through creative and practical activities within a range of relevant contexts, pupils are taught the knowledge, skills and understanding needed to engage in the process of designing and making. During Key Stage 1 children learn about DT through exploration of different topics which can include: making puppets, making wind-up toys and looking at homes and buildings.

Pupils are taught to:

- Design - design purposeful and appealing products based on design criteria and generate, develop, model and communicate their ideas through discussion, drawing, templates and mock-ups as well as ICT where appropriate.
- Make - select and use a range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) and select and use a wide range of materials and components (construction materials, ingredients or textiles)
- Evaluate - explore and evaluate a range of existing products and own ideas according to design criteria
- Technical knowledge - build structures, exploring how they can be made stronger and more stable, know that a wind-up mechanism needs a handle connected to an axle that turns, mark out and cut fabric, explore basic sewing techniques and use appropriate vocabulary linked to their product
- Cooking and Nutrition - use the basic principles of a healthy and varied diet to prepare dishes and understand where food comes from, name and sort food into the five food groups, be aware of the importance of fruit and vegetables, work safely and hygienically to prepare simple dishes, use techniques such as cutting, peeling and grating and explore sensory vocabulary to classify foods according to their sensory and other properties

## Lower Key Stage 2

Through creative and practical activities within a range of relevant contexts, pupils are taught the knowledge, skills and understanding needed to engage in the process of designing and making. During Lower Key Stage 2 children learn about DT through exploration of different topics which can include: Vikings, Making It! Trip, Moving Monsters and Healthy food bars.

Pupils are taught to:

- Design - design products linked to purpose and explain how parts of the product work, use research to develop their design according to design criteria, share and clarify ideas through discussion, use sketches, cross-sectional drawings and computer aided design and order the main stages of making
- Make - select appropriate tools and equipment for their product and explain why, explore levers and linkage systems, mechanical, electrical components and construction kits, measure, mark out, cut and shape materials and assemble and join materials with some accuracy and use a range of finishing techniques
- Evaluate - explore and evaluate a range of products, discuss features they like or dislike, talk about products in terms of their purpose, evaluate their own products and how to improve them linked to the design criteria and know about inventors, designers, engineers and manufacturers who have developed ground-breaking products
- Technical Knowledge - use learning from other subjects to make products that work, know about the functional and aesthetic qualities of material, use correct technical vocabulary and to use a range of joining and combining techniques appropriately
- Cooking and Nutrition - talk about chefs who have created ground breaking products, understand and apply the principles of a healthy and varied diet, understand seasonality, the process through which food is grown, caught, reared or processed in the UK and throughout the world, work safely and hygienically and to use techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

## Upper Key Stage 2

Through creative and practical activities within a range of relevant contexts, pupils should be taught the knowledge, skills and understanding needed to

engage in the process of designing and making. During Upper Key Stage 2 children learn about DT through exploration of different topics which can include: Life after War / Moon Buggies, Shelters, Bridges and Towers and Materials linked to Whitby.

Pupils should be taught to:

- Design - describe the purpose of their product and explain how it works, research using surveys, interviews, questionnaires or web-based resources, identify the needs, preferences and values of a particular individual / group, share and clarify ideas through discussion, use annotated sketches, computer aided design and cross sectional drawings to develop and share their ideas, make design decisions that account for availability, time, resources and cost and formulate step-by-step plans as a guide to making
- Make - select and explain their choice of suitable tools or equipment for the task and the skills and techniques they will be using, measure, mark out, cut and shape materials to assemble and join with accuracy and apply a range of finishing techniques with accuracy
- Evaluate - identify strengths and areas for development in their ideas and products, consider the views of others to improve their work, critically evaluate the design, manufacture and fitness for purpose of their products as the design and make, analyse the cost of products, how innovative they are, sustainability and impact beyond intended purpose and know about inventors, designers, engineers and manufacturers who have develop ground-breaking products
- Technical Knowledge - measure, mark out, cut and join with accuracy, use appropriate tools safely and effectively, know how mechanical systems such as cams, pulleys or gears create movement, use the correct technical vocabulary for their projects, know that materials have functional and aesthetic qualities, that some materials can be combined and mixed to create more useful characteristics, know how to control speed and direction using pulleys or gears and know how more complex electrical circuits and components can be used to create functional products
- Cooking and Nutrition - understand that the season may affect the food available, select and use a range of fruit and vegetables, processes and tools to make their product, know about chefs who have developed ground-breaking products, understand and apply the principles of a varied and healthy diet, know how to prepare and cook a range of dishes safely

and hygienically using a heat source if appropriate, understand the Eat Well plate and about the importance of healthy food and drink, and understand that recipes can be adapted to change the appearance, taste, texture and aroma.