



# Trottscliffe CEP School

## DT Curriculum & Skills Progression



### Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

### Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

### Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

**Schools are not required by law to teach the example content in [square brackets].**

## Subject content

### Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

#### Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

#### Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

#### Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

#### Technical knowledge

- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

### Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

#### Design

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

#### Make

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

#### Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

#### Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

**Year 1 & Year 2****Processes**

- Create simple designs for a product
- Use pictures and words to describe what he/she wants to do
- Select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing
- Use a range of simple tools to cut, join and combine materials and components safely
- Ask simple questions about existing products and those that he/she has made
- Build structures, exploring how they can be made stronger, stiffer and more stable
- Use wheels and axles in a product
- Design purposeful, functional, appealing products for himself/herself and other users based on design criteria
- Generate, develop, model and communicate his/her ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- Choose appropriate tools, equipment, techniques and materials from a wide range
- Safely measure, mark out, cut and shape materials and components using a range of tools
- Evaluate and assess existing products and those that he/she has made using a design criteria
- Investigate different techniques for

**Year 3 & Year 4****Processes**

- Use knowledge of existing products to design his/her own functional product
- Create designs using annotated sketches, cross-sectional diagrams and simple computer programmes
- Safely measure, mark out, cut, assemble and join with some accuracy
- Make suitable choices from a wider range of tools and unfamiliar materials and plan out the main stages of using them
- Investigate and analyse existing products and those he/she has made, considering a wide range of factors
- Strengthen frames using diagonal struts
- Understand how mechanical systems such as levers and linkages or pneumatic systems create movement
- Use knowledge of existing products to design a functional and appealing product for a particular purpose and audience
- Create designs using exploded diagrams
- Use techniques which require more accuracy to cut, shape, join and finish his/her work e.g. Cutting internal shapes, slots in frameworks
- Use his/her knowledge of techniques and the functional and aesthetic qualities of a wide range of materials to plan how to use them
- Consider how existing products and his/her own finished products might be improved and how well they meet the needs of the intended user
- Apply techniques he/she has learnt to strengthen structures and explore his/her own ideas

**Year 5 & Year 6****Processes**

- Use his/her research into existing products and his/her market research to inform the design of his/her own innovative product
- Create prototypes to show his/her ideas
- Make careful and precise measurements so that joins, holes and openings are in exactly the right place
- Produce step by step plans to guide his/her making, demonstrating that he/she can apply his/her knowledge of different materials, tools and techniques
- Make detailed evaluations about existing products and his/her own considering the views of others to improve his/her work
- Build more complex 3D structures and apply his/her knowledge of
- Use research he/she has done into famous designers and inventors to inform the design of his/her own innovative products
- Generate, develop, model and communicate his/her ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided desi
- Apply his/her knowledge of materials and techniques to refine and rework his/her product to improve its functional properties and aesthetic qualities
- Use technical knowledge accurate skills to problem solve during the making process
- Use his/her knowledge of famous designs to further explain the effectiveness of existing products and products he/she have made
- Use a wide range of methods to strengthen, stiffen and reinforce

stiffening a variety of materials and explore different methods of enabling structures to remain stable

- Explore and use mechanisms e.g. levers, sliders, wheels and axles, in his/her products

- Understand and use electrical systems in products

strengthening techniques to make them stronger or more stable

- Understand how to use more complex mechanical and electrical systems

complex structures and can use them accurately and appropriately

- Apply his/her understanding of computing to program, monitor and control his/her product

## Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

### Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

### Key stage 2

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Year 1 & Year 2	Year 3 & Year 4	Year 5 & Year 6
<p><b>Cooking &amp; Nutrition</b></p> <ul style="list-style-type: none"> <li>●Talk about what he/she eats at home and begin to discuss what healthy foods are</li> <li>●Say where some food comes from and give examples of food that is grown</li> <li>●Use simple tools with help to prepare food safely</li> <li>●Understand the need for a variety of food in a diet</li> <li>●Understand that all food has to be farmed, grown or caught</li> <li>●Use a wider range of cookery techniques to prepare food safely</li> </ul>	<p><b>Cooking &amp; Nutrition</b></p> <ul style="list-style-type: none"> <li>●Talk about the different food groups and name food from each group</li> <li>●Understand that food has to be grown, farmed or caught in Europe and the wider world</li> <li>●Use a wider variety of ingredients and techniques to prepare and combine ingredients safely</li> <li>●Understand what makes a healthy and balanced diet, and that different foods and drinks provide different substances the body needs to be healthy and active</li> <li>●Understand seasonality and the advantages of eating seasonal and locally produced food</li> <li>●Read and follow recipes which involve several processes, skills and techniques</li> </ul>	<p><b>Cooking &amp; Nutrition</b></p> <ul style="list-style-type: none"> <li>●Understand the main food groups and the different nutrients that are important for health</li> <li>●Understand how a variety of ingredients are grown, reared, caught and processed to make them safe and palatable / tasty to eat</li> <li>●Select appropriate ingredients and use a wide range of techniques to combine them</li> <li>●Confidently plan a series of healthy meals based on the principles of a healthy and varied diet</li> <li>●Use information on food labels to inform choices</li> <li>●Research, plan and prepare and cook a savoury dish, applying his/her knowledge of ingredients and his/her technical skills</li> </ul>