

# Design and Technology policy

Clee Hill Community Academy

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## 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.

Design and Technology provides opportunities for pupils to develop their capabilities, combining their designing and making skills with knowledge and understanding in order to create quality products that have a purpose. It involves inventive thinking, investigating, planning, evaluating and using a wide range of materials in many different situations. It is essential to prepare pupils to participate in tomorrow's rapidly changing technologies

### **Early years foundation stage**

Important design and technology skills are addressed through Physical Development, Understanding the World and Expressive Arts and Design. It is also part of the Characteristics of Learning that are an essential part in the early years curriculum.

Pupils learn through practical activities and are given opportunities to develop and explore skills through both directed adult led activities and child initiated play. They have access to a rich, stimulating environment which encourages exploration, problem solving, prediction, critical thinking, decision making and discussion.

## 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:

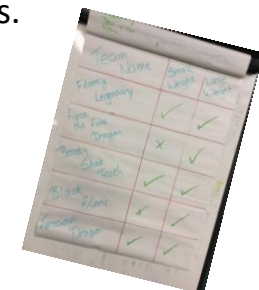
### Design

- 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.



## 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.



**Planning**

	Autumn	Spring	Summer
Foundation Stage	Ongoing opportunities led by children's own fascinations		
Cycle A	Autumn	Spring	Summer

Class 1	Food <ul style="list-style-type: none"> <li>• Fruit salads</li> <li>• Food preparation</li> </ul>	Textiles <ul style="list-style-type: none"> <li>• Patchwork quilt</li> <li>• Properties of fabrics</li> </ul>	Structures <ul style="list-style-type: none"> <li>• Playground equipment</li> </ul>
Class 2	Food <ul style="list-style-type: none"> <li>• Oliver's Fruit</li> <li>• Keeping healthy</li> <li>• Fruit smoothies</li> </ul>	Structures <ul style="list-style-type: none"> <li>• The Three Billy Goats Gruff -Bridges</li> <li>• Goldilocks and the Three Bears - Chairs</li> </ul>	Mechanisms <ul style="list-style-type: none"> <li>• Wheels and axles</li> <li>• Train carriages/.Emergency vehicles</li> </ul>
Class 3	Food <ul style="list-style-type: none"> <li>• Bread - Design and make bread (combining ingredients)</li> <li>• Swifts the bakers</li> </ul>	Structures <ul style="list-style-type: none"> <li>• Bridges - joining materials</li> </ul>	Packaging <ul style="list-style-type: none"> <li>• Roman treasure box - packaging</li> </ul>
Class 4	<b>Mechanisms: Moving Toys—Cams</b> <u>Trip to Ingenuity?</u> We find out how the movement of a mechanism within a toy or model will change rotary motion into linear motion using cams. We design toys with a moving part and test our design ideas, making adjustments where necessary.	Food: Bread/ biscuits We discover what food was even on board ships in Tudor times and explore how these 'hardtack' biscuits can be improved for our tastes.	Textiles: Bags/ Money containers We look at a range of existing products and use these to design and make our own using a list of agreed criteria. We make simple patterns and evaluate how useful these were after we have made our finished product.
Class 5	<b>Textiles:</b> <ul style="list-style-type: none"> <li>• Viking purses</li> </ul>	<b>Textiles:</b> <ul style="list-style-type: none"> <li>• Poisoned dart beanbags</li> </ul>	<b>Structures:</b> <ul style="list-style-type: none"> <li>• Building a structure to withstand an earthquake.</li> </ul>

Cycle B	Autumn	Spring	Summer
Class 1	Food <ul style="list-style-type: none"> <li>• Making pizzas</li> <li>• Pizza toppings</li> </ul>	Mechanisms <ul style="list-style-type: none"> <li>• Animal puppets</li> <li>• Moving joints</li> </ul>	Structures <ul style="list-style-type: none"> <li>• Make a beach hut</li> </ul>
Class 2	Food/Electricity <ul style="list-style-type: none"> <li>• Making cookies</li> </ul>	Textiles <ul style="list-style-type: none"> <li>• Make a simple bag for Little Red</li> </ul>	Structures <ul style="list-style-type: none"> <li>• Building habitats</li> </ul>

	<ul style="list-style-type: none"> <li>• Street lights</li> <li>• Link with local enquiry</li> </ul>	Riding Hood	
Class 3	<b>Movement</b> <ul style="list-style-type: none"> <li>• Moving monsters (pneumatics)</li> <li>• Trip to Enigunity</li> </ul>	<b>Food</b> <ul style="list-style-type: none"> <li>• Flat breads - (combining ingredients)</li> <li>• Sandwiches (cutting skills)</li> </ul>	<b>Structures</b> <ul style="list-style-type: none"> <li>• Photograph frames - (making a stable structure)</li> </ul>
Class 4	<b>Food: WWII rations</b> We look at the balanced plate, evaluate ingredients, record and explain preferences, i.e., different types of veg used in Woolton Pie and how vegetables were used in altered recipes. We look at different ways to make a pie, cook/taste components for fillings, taste ingredients and combinations. We chop ingredients using knives safely and explore the function of pie components to hold, bind and nourish. We design, make and evaluate own WWII dish—pie, biscuit or cake using our research.	<b>Electricity—alarms/ lighting with sensors</b> We investigate how circuits in torches are made to understand the function of each component and how they are fit for purpose. We design own battery powered alarms or lighting systems for use in our museum or for Anglo-Saxon artefacts.	<b>Mechanisms: Storybooks (Science)</b> We look at how levers and linkages have been used in pop up books. We make our own examples where levers and linkages are used with fixed and non-fixed pivots to make moving pictures.
Class 5	<b>Food:</b> <ul style="list-style-type: none"> <li>• Chocolate tasting and making</li> <li>• Tortillas</li> <li>• Greek Salads</li> </ul> <b>Electricity</b> <ul style="list-style-type: none"> <li>• Designing and making electrical game</li> </ul>	<b>Victorians:</b> <b>Textiles: Victorian Sampler</b>	<b>Sustainability:</b> <ul style="list-style-type: none"> <li>•</li> </ul>

Planning, like science is done in whole class big books where the children's work is displayed. Sometimes the design and technology project may link with science and will therefore form part of the science big book. Many cross curricular links



can be made with design and technology including maths, English, science, history and forest school, which can be seen in the long term planning.

Please see the website for details of planning.

Progression grids to follow.

## **Reading**

Opportunities for reading in D and T occur in lessons from YrR to Yr6. When researching existing products, the children use books, reading headings, labels, facts and more detailed information. Questions for them to answer are key and labelling diagrams and pictures to share encourage the use of more technical vocabulary. Food technology encourages reading using recipes – ingredients and utensils. As with all making processes the children follow, talk about and record what they have done through pictures, diagrams and explanations. Instructions are closely linked with the English curriculum and non-fiction texts and design and technology can provide excellent contexts for this.

## **Equal Opportunities**

At Clee Hill all children have access to and are encouraged to participate in all areas of Design and Technology.

## **Special Educational Needs and Disabilities**

Clee Hill is committed to promoting equality and opportunity for all pupils with learning difficulties and all pupils with special educational needs. When planning and teaching design and technology staff will make reasonable adjustments to promote equality of opportunity for disabled and non-disabled pupils. This may include allocating adult support, providing additional support materials, providing alternative support materials or modifying tasks.

## **Gifted and Talented**

Children who are gifted and talented in Design and Technology will be put on the gifted and talented register.