



# Design and Technology at Hurst Green

*“Living, loving and learning with God”*

## National Curriculum 2014 – Statutory Coverage

### 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.

## 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].

#### 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.

Year Group	Design	Make	Evaluating/Technical Knowledge	Cooking and Nutrition
<p><b>Nursery</b></p> <p><b>2 year olds</b></p>	<p>Explore different materials, using all their senses to investigate them. Manipulate and play with different materials.</p> <p>Use their imagination as they consider what they can do with different materials.</p>	<p>Make simple models which express their ideas.</p>		
<p><b>3 and 4 year olds</b></p>	<p>Explore different materials freely, in order to develop their ideas about how to use them and what to make.</p> <p>Develop their own ideas and then decide which materials to use to express them.</p>	<p>Join different materials and explore different textures.</p>		
<p><b>Reception</b></p>	<p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</p>	<p>Create collaboratively, sharing ideas, resources and skills</p>	<p>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</p>	
<b>Characteristics of Effective Teaching and Learning</b>				
	<p>Reach for and accept objects.</p> <p>Make choices and explore different resources and materials.</p> <p>Plan and think ahead about how they will explore or play with objects.</p>	<p>Make independent choices. Do things independently that they have been previously taught.</p> <p>Use a range of strategies to reach a goal they have set themselves.</p>	<p>Review their progress as they try to achieve a goal. Check how well they are doing.</p> <p>Make more links between those ideas.</p>	

	Know more, so feel confident about coming up with their own ideas.	Keep on trying when things are difficult.		
	<b>Design</b>	<b>Make</b>	<b>Evaluating/Technical Knowledge</b>	<b>Cooking and Nutrition</b>
<b>Years 1 and 2</b>	<p>To design purposeful, functional and appealing products for themselves and others.</p> <p>To draw in their own experience to help generate ideas.</p> <p>To suggest ideas and explain what they are going to do.</p> <p>To identify a target group for what they are going to design and make.</p> <p>To model their ideas in card and paper.</p> <p>To develop their design ideas applying findings from their earlier research.</p>	<p>To make their design using appropriate techniques.</p> <p>With help, to measure, mark out, cut and shape a range of materials.</p> <p>To use tools e.g. scissors, needles, pinsete.</p> <p>To assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape.</p> <p>To use simple finishing techniques to improve the appearance of their product.</p>	<p>To evaluate their product by discussing how well it works in relation to purpose.</p> <p>To evaluate their products as they are developed, identifying strengths and possible changes they might make.</p> <p>To evaluate their product by asking questions about what they have made and how they have gone about it</p>	<p>To begin to understand that all food comes from plants and animals.</p> <p>To know how to name and sort foods into five food groups in the Eatwell Plate.</p> <p>To know basic food handling, hygienic practices, preparing food and personal hygiene.</p>

	<b>Design</b>	<b>Make</b>	<b>Evaluating/Technical Knowledge</b>	<b>Cooking and Nutrition</b>
<b>Years 3 and 4</b>	<p>To generate ideas for an item, considering its purpose and the user/s.</p> <p>To identify a purpose and establish criteria for a successful product.</p> <p>To plan the order of their work before starting.</p> <p>To explore, develop and communicate design proposals by modelling ideas.</p> <p>To make drawings with labels when designing.</p>	<p>To select tools and techniques for making their product.</p> <p>Measure, mark out, cut, score and assemble components with more accuracy.</p> <p>To work safely and accurately with a range of simple tools.</p> <p>To think about their ideas as the make progress and be willing to change if this helps them to improve their work.</p> <p>To use finishing techniques to strengthen and improve the appearance of their product using a range of equipment including ICT.</p>	<p>To evaluate their product against original design criteria, e.g. how well it meets its intended purpose.</p> <p>To disassemble and evaluate familiar products.</p>	<p>Demonstrate hygienic food preparation and storage.</p> <p>That a healthy diet is made up from a variety and balance of different food and drink, as depicted in the Eatwell Plate.</p> <p>How to prepare simple dishes safely and hygienically with a heat source.</p>
	<b>Design</b>	<b>Make</b>	<b>Evaluating/Technical Knowledge</b>	<b>Cooking and Nutrition</b>
<b>Years 5 and 6</b>	<p>To generate ideas through brainstorming and identify a purpose for their product.</p> <p>To draw up a specification for their design.</p>	<p>To use a wider range of appropriate material, tools and techniques.</p> <p>To measure and mark out accurately.</p>	<p>To evaluate a product against the original design specification.</p> <p>To evaluate it personally and seek evaluation from others.</p>	<p>To apply the rules for basic food hygiene and other safe practices, e.g. hazards relating to the use of ovens.</p>

	<p>To develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail.</p> <p>To use results of investigations, information sources, including ICT when developing design ideas.</p> <p>Model their ideas using prototype and pattern pieces</p>	<p>To use different tools and equipment safely and accurately</p> <p>To cut and join with accuracy to ensure a good-quality finish to the product.</p>	<p>Evaluate how learning from science and Mathematics can help design and make products that work.</p>	<p>To have a basic understanding of how food is grown, reared or caught in the UK.</p> <p>To know how to prepare and cook a range of predominantly savoury dishes safely and hygienically, where appropriate, the use of a heat source.</p> <p>Use a range of techniques when such as peeling and chopping.</p> <p>To weigh and measure dry ingredients and liquids accurately.</p>
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Design and Technology Vocabulary				
	Design	Make	Evaluating/Technical Knowledge	Cooking and Nutrition
EYFS	Plan • Draw • Ideas • Design	Make • Build • Combine • Join • Shape • Tools	Change • Like • Dislike • Next time • Better • Worse • Different • Instead	
KS1	• Plan • Prepare • Design • Materials • Ideas • Use • Model • Development • Market Research • Survey • Template	Fast • Slow • Faster • Slower • Up • Down • Turn • Wind up • Design • Draw • Sketch • Tools • Fix • Glue • Attach • Features • Brick • Wood • Stone • Cloth • Metal • Foam • Felt • Paper • Tissue • Newspaper • Cardboard • String • Wool • Clay • Scissors • Glue • Tape • Cut • Stick • Decorate	Change • Improve • Prefer • Useful • Unsuccessful • Future • Progress • modify • Alter • Adapt • Original • Finished article • Evaluate • Graphics	Healthy • Unhealthy • Source • Fruit • Vegetables • Clean • Safe • Dirty • Unsafe • Amount • Ingredients • Recipe • Weight • Nutrients • Vegetarian • Dietary requirements
KS2	• Plan • Organise • Prototype • Initial ideas • Criteria • Diagrams • Labels • Annotate • Brief • Product • Consumer • Customer • Target audience • Purpose • Application • Constraints • Client	Materials • Mould • Liquid • Solid • Form • Shape • Adhesive • Lattice • Mass-produce • Hand-made • Packaging • Presentation • Machine made • Dimensions • Durable	• Assess • Edit • Improve • Alter • Outcome • Develop • Test • Analyse Effective • Fit for purpose • Design criteria • Alternatives • Models • Quality • Function • Functionality	Healthy • Unhealthy • Balanced • Vitamins • Disease • Nutrition • Healthy eating • Hygiene • Diet • Cross contamination • Grams • Storage • Presentation • Taste • Texture • Flavour • Disinfect • Bacteria