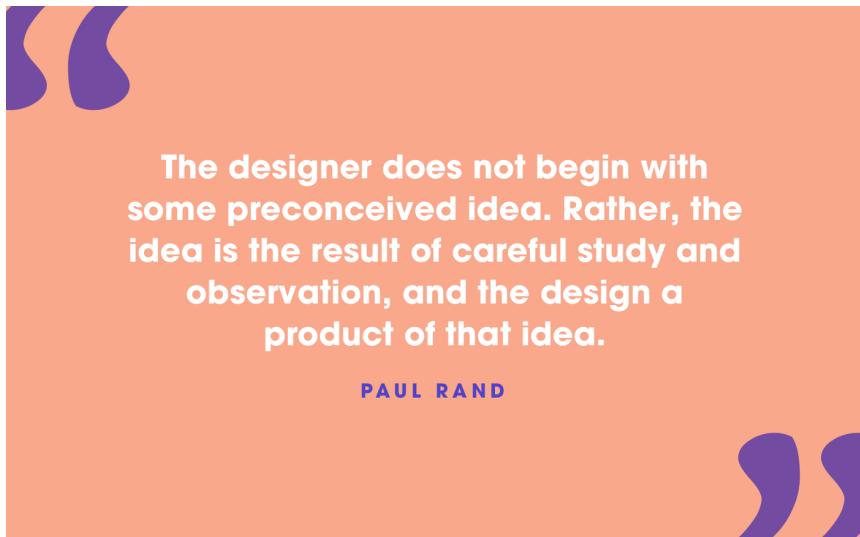




# Design and Technology:

## The Lovelace Way



### Intent

At Lovelace, we believe that high-quality design and technology lessons should be **taught through creativity and imagination, allowing pupils to design and make products that solve real and relevant problems within a variety of contexts**, considering their own and others' needs, wants and values. Children are taught in a cross-curricular way allowing them to draw on their knowledge from a variety of subject areas such as mathematics, science, engineering, computing and art. Teaching will allow children to take risks, becoming resourceful, innovative, enterprising and capable citizens. A high-quality D&T education will allow the pupils of Lovelace to contribute to the creativity, culture, wealth and well-being of the country they live in.

 D&T Overview 2022/2023

### National Curriculum Aims

[National Curriculum - Design and technology key stages 1 to 2](#)

The national curriculum 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.

## **Implementation**

D&T is taught through discrete, meaningful lessons in which children are taught through the three phases of designing, making and evaluating their own products. Each year group focuses on 3 topics throughout the year and each topic will focus on a separate set of skills. As children progress through the school, they are presented with opportunities to develop these skills, as similar topics are revisited and built upon.

Children should learn the importance of working in order to develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. Children should also 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. Finally they should critique, evaluate and test their ideas/products and the work of others. All year groups follow the National Curriculum for Design and Technology (Project on a Page), and therefore when designing, making and evaluating, pupils are taught the following topics:

|               | <b>Autumn</b>                                 | <b>Spring</b>                                | <b>Summer</b>                                      |
|---------------|---|--|--|
| <b>Year 1</b> | Mechanisms<br>Wheels and axles                | Food<br>Preparing fruit and vegetables       | Mechanisms<br>Sliders and levers                   |
| <b>Year 2</b> | Structures<br>Freestanding structures         | Textiles<br>Templates and joining techniques | Food<br>Preparing fruit and vegetables             |
| <b>Year 3</b> | Mechanical Systems<br>Levers and linkages     | Food<br>Healthy and varied diet              | Structures<br>Shell structures                     |
| <b>Year 4</b> | Textiles<br>2D shape to 3D shape              | Food<br>Healthy and varied diet              | Electrical Systems<br>Simple circuits and switches |
| <b>Year 5</b> | Textiles<br>Combining different fabric shapes | Food<br>Celebrating culture and seasonality  | Mechanical Systems<br>Pulleys, gears or cams       |

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| <b>Year 6</b> | <b>Food</b><br>Celebrating culture and seasonality | <b>Electrical Systems</b><br>Using more complex switches and circuits | <b>Structures</b><br>Frame structures |
|---------------|--|---|---------------------------------------|

- ✓ As D&T is a foundation subject it is recommended for a topic to be taught for 8-12 hours per term.
- ✓ Three D&T projects need to be completed across the year (one per term).
- ✓ One of the three projects needs to be a Food Technology project.
- ✓ A textile project should be completed once every 2 years.

## Planning

- ✓ All design and technology planning should be recorded on the Lovelace Medium Term Foundation Subjects plan.
- ✓ All lessons should have a clear learning objective and success criteria that are appropriate for the age range of the children.
- ✓ Within planning, teachers should consider how the children are going to record each piece of work and there should be a variety of ways of doing this. (see below)
- ✓ Over the year children should cover the National Curriculum for their key stage.
- ✓ There should also be cross-curricular learning where the topic lends itself, such as ICT, history, English and Mathematics.

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| Key WOW factor: (e.g. a trip, visitors, residential, pupil previous experiences, artefact or objects, films, photographs, fieldwork, environment area etc.) | Key end learning task: (e.g. class assembly, class book, making a film, Tudor banquet, exhibition, sharing with another class etc.) | Time available, key resources & relevant hyperlinks: |
| WOW – ‘Tour of a cathedral’. Debate. Display  | Debate. Display   |  |

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|---------|-----|-----|---------|---------|-----------|----|-----|-------|-------|------------|-----------|-------|
| English | ICT | MFL | Science | History | Geography | RE | Art | D & T | Music | PE & Sport | PSHE/SMSC | MATHS |
|         |     |     |         |         |           |    |     | x     |       |            |           |       |

| Week | Key objectives [OLI]   | Learning Tasks & Activities   | Differentiation & Personalisation | Key Vocabulary  | Resources / ICT  |
|------|--|---|-----------------------------------|---|--|
| 1    | OLI: I can develop my design criteria to design a product fit for purpose<br><br>OLI: I can design a working water well. | Look at images of wells - what are they? What are they for? Who uses them? How?<br><br>Look at history of Britain's water systems from rivers - wells - pipes<br><br>We are going to design our own water well.<br><br>Key questions to consider for our design brief - What is the product? Who is the user? What is the purpose? Chn to complete this part of their design brief.<br><br>Look at example craft water wells including Miss C's- Key questions to consider - What parts will it have? How will I make the product? How will I use it? - How will I know it works? Chn to answer How will I know it works? What have I noticed from looking at other real life examples that might help me?<br><br>Chn to draw and label their own well. | Writing frames                    | force<br>fasten<br>pulley<br>lift<br>carry<br>construction<br>rotate<br>load<br><br>purpose<br>design<br>user | pictures of real wells<br>pictures of craft wells<br>example model |

## Progression of Design and Technology Skills

| DT                       |  |
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| Three and Four-Year-Olds | Personal, Social and Emotional Development |
|                          | Physical Development                       |
|                          | Understanding the World                    |
|                          | Expressive Arts and Design                 |

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| Reception | Physical Development       | <ul style="list-style-type: none"> <li>Progress towards a more fluent style of moving, with developing control and grace.</li> <li>Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</li> <li>Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.</li> </ul> |
|           | Expressive Arts and Design | <ul style="list-style-type: none"> <li>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</li> <li>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</li> <li>Create collaboratively, sharing ideas, resources and skills.</li> </ul>                                   |

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| ELG | Physical Development       | Fine Motor Skills       | <ul style="list-style-type: none"> <li>Use a range of small tools, including scissors, paintbrushes and cutlery.</li> </ul>  |
|     | Expressive Arts and Design | Creating with Materials | <ul style="list-style-type: none"> <li>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> <li>Share their creations, explaining the process they have used.</li> </ul> |

## Practical Skills and Techniques

|      | EYFS  | Year 1 & Year 2  |   | Year 3 & Year 4  |  | Year 5 & Year 6   |  |
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| Mech | <b>Prior learning</b> <ul style="list-style-type: none"> <li>Assembled vehicles with moving wheels using construction kits.</li> <li>Explore moving vehicles through play.</li> <li>Gained some experience of designing, making and evaluating products for a specified user and purpose.</li> <li>Developed some cutting, joining and</li> </ul> | <b>Year 1 Wheels and Axels</b><br><br><b>Designing</b> <ul style="list-style-type: none"> <li>Generate initial ideas and simple design criteria through talking and using own experiences.</li> <li>Develop and communicate ideas through drawings and mock-ups.</li> </ul><br><br><b>Making</b> <ul style="list-style-type: none"> <li>Select from and use a range of tools and equipment to</li> </ul> | <b>Year 1 Sliders and Levers</b><br><br><b>Designing</b> <ul style="list-style-type: none"> <li>Generate ideas based on simple design criteria and their own experiences, explaining what they could make.</li> <li>Develop, model and communicate their ideas through drawings and mock-ups with card and paper.</li> </ul><br><br><b>Making</b> | <b>Year 3 Levers and Linkages</b><br><br><b>Prior learning</b> <ul style="list-style-type: none"> <li>Explored and used mechanisms such as flaps, sliders and levers.</li> <li>Gained experience of basic cutting, joining and finishing techniques with paper and card.</li> </ul><br><br><b>Designing</b> <ul style="list-style-type: none"> <li>Generate realistic ideas and their own design criteria</li> </ul> | <b>Prior learning</b> <ul style="list-style-type: none"> <li>Experience of axles, axle holders and wheels that are fixed or free moving.</li> <li>Basic understanding of electrical circuits, simple switches and components.</li> <li>Experience of cutting and joining techniques with a range of materials including card, plastic and wood.</li> <li>An understanding of how to</li> </ul> | <b>Year 5 Pulleys, gears or cams</b><br><br><b>Designing</b> <ul style="list-style-type: none"> <li>Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.</li> <li>Develop a simple design specification to guide their thinking.</li> <li>Develop and communicate ideas through discussion, annotated drawings, exploded drawings and</li> </ul> |  |

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| <b>a</b><br><b>n</b><br><b>i</b><br><b>s</b><br><b>m</b><br><b>s</b> | finishing skills with card.<br><br><b>Prior learning</b> <ul style="list-style-type: none"> <li>• Early experiences of working with paper and card to make simple flaps and hinges.</li> <li>• Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.</li> </ul> | perform practical tasks such as cutting and joining to allow movement and finishing.<br><br><b>Evaluating</b> <ul style="list-style-type: none"> <li>• Explore and evaluate a range of products with wheels and axles.</li> <li>• Evaluate their ideas throughout and their products against original criteria.</li> </ul> | <ul style="list-style-type: none"> <li>• Plan by suggesting what to do next.</li> <li>• Select and use tools, explaining their choices, to cut, shape and join paper and card.</li> <li>• Use simple finishing techniques suitable for the product they are creating.</li> </ul> <b>Evaluating</b> <ul style="list-style-type: none"> <li>• Explore a range of existing books and everyday products that use simple sliders and levers.</li> <li>• Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.</li> </ul> | through discussion, focusing on the needs of the user.<br><br><ul style="list-style-type: none"> <li>• Use annotated sketches and prototypes to develop, model and communicate ideas.</li> </ul> <b>Evaluating</b> <ul style="list-style-type: none"> <li>• Investigate and analyse books and, where available, other products with lever and linkage mechanisms.</li> <li>• Evaluate their own products and ideas against criteria and user needs, as they design and make.</li> </ul> | strengthen and stiffen structures. | drawings from different views.<br><br><b>Making</b> <ul style="list-style-type: none"> <li>• Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</li> <li>• Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.</li> </ul> <b>Evaluating</b> <ul style="list-style-type: none"> <li>• Compare the final product to the original design specification.</li> <li>• Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</li> <li>• Consider the views of others to improve their work. <ul style="list-style-type: none"> <li>• Investigate famous manufacturing and engineering companies relevant to the project.</li> </ul> </li> </ul> |  |
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| <h1>Electrical Systems</h1> |  |  |  | <p><b>Year 4 Simple Circuits and Switches</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.</li> <li>Cut and join a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.</li> </ul> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.</li> <li>Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>Order the main stages of making.</li> <li>Select from and use tools and equipment to cut, shape, join and finish with some accuracy.</li> <li>Select from and use materials</li> </ul> | <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.</li> <li>Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off.</li> </ul> | <p><b>Year 6 Using more complex switches and circuits</b></p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost.</li> <li>Generate and develop innovative ideas and share and clarify these through discussion.</li> <li>Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.</li> <li>Competently select and accurately assemble materials,</li> </ul> |
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|  |   |  |  |   | <p>and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.</p> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Investigate and analyse a range of existing battery-powered products.</li> <li>Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</li> </ul> |  | <p>and securely connect electrical components to produce a reliable, functional product.</p> <ul style="list-style-type: none"> <li>Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Continually evaluate and modify the working features of the product to match the initial design specification</li> <li>Test the system to demonstrate its effectiveness for the intended user and purpose.</li> <li>Investigate famous inventors who developed groundbreaking electrical systems and components.</li> </ul> |
|  | <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>Experience of common fruit and vegetables, undertaking sensory</li> </ul> | <p><b>Year 1 Preparing Fruit and Vegetables</b></p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Design appealing</li> </ul> | <p><b>Year 2 Preparing Fruit and Vegetables</b></p> <p><b>Prior learning</b></p> | <p><b>Year 3 Healthy and Varied Diet</b></p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Generate and clarify ideas through discussion with</li> </ul> | <p><b>Year 4 Healthy and Varied Diet</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>Have knowledge and understanding about food</li> </ul>   | <p><b>Year 5 Celebrating Culture and Seasonality</b></p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Generate innovative ideas</li> </ul> | <p><b>Year 6 Celebrating Culture and Seasonality</b></p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Generate innovative ideas</li> </ul>  |

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| <b>Food Preparation</b> | <p>activities i.e. appearance taste and smell.</p> <ul style="list-style-type: none"> <li>• Experience of cutting soft fruit and vegetables using appropriate utensils.</li> </ul> | <p>products for a particular user based on simple design criteria.</p> <ul style="list-style-type: none"> <li>• Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.</li> <li>• Communicate these ideas through talk and drawings.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.</li> <li>• Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.</li> <li>• Evaluate ideas and finished products against design criteria, including intended user and purpose.</li> </ul> | <ul style="list-style-type: none"> <li>• Know some ways to prepare ingredients safely and hygienically.</li> <li>• Have some basic knowledge and understanding about healthy eating and <i>The Eatwell plate</i>.</li> <li>• Have used some equipment and utensils and prepared and combined ingredients to make a product.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of a recipe, listing ingredients, utensils and equipment.</li> <li>• Select and use appropriate utensils and equipment to prepare and combine ingredients.</li> <li>• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</li> <li>• Evaluate the ongoing work and the final</li> </ul> | <p>peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.</p> <ul style="list-style-type: none"> <li>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Write a step-by-step recipe, including a list of ingredients, equipment and utensils</li> <li>• Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.</li> <li>• Make, decorate and present the food product appropriately for the intended user and purpose.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations of a range of relevant products and ingredients.</li> </ul> | <p>hygiene, nutrition, healthy eating and a varied diet.</p> <ul style="list-style-type: none"> <li>• Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.</li> <li>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Write a step-by-step recipe, including a list of ingredients, equipment and utensils</li> <li>• Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.</li> <li>• Make, decorate and present the food product appropriately for the intended user and purpose.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations of a range of relevant products and ingredients.</li> </ul> | <p>ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.</p> <ul style="list-style-type: none"> <li>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.</li> <li>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.</li> </ul> |
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|  |   |  |  | <p>product with reference to the design criteria and the views of others.</p>   |  | <p>Record the evaluations using e.g. tables/graphs/charts such as star diagrams.</p> <ul style="list-style-type: none"> <li>Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</li> <li>Understand how key chefs have influenced eating habits to promote varied and healthy diets.</li> </ul> | <p>appropriately for the intended user and purpose.</p> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.</li> <li>Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</li> <li>Understand how key chefs have influenced eating habits to promote varied and healthy diets.</li> </ul> |
|  | <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>Experience of using construction kits to build walls, towers and frameworks.</li> <li>Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.</li> </ul> |  | <p><b>Year 2 Freestanding Structures</b></p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>Generate ideas based on simple design criteria and their own experiences, explaining what they could make.</li> <li>Develop, model and communicate ideas.</li> </ul> | <p><b>Year 3 Shell Structures</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>Experience of using different joining, cutting and finishing techniques with paper and card.</li> <li>A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses</li> </ul> |  |   | <p><b>Year 6 Frame Structures</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.</li> <li>Basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses</li> </ul>  |

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| <b>S<br/>t<br/>r<br/>u<br/>c<br/>t<br/>u<br/>r<br/>e<br/>s</b> | <ul style="list-style-type: none"> <li>• Experience of different methods of joining card and paper.</li> </ul> | <p>e their ideas through talking, mock-ups and drawings.</p> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan by suggesting what to do next.</li> <li>• Select and use tools, skills and techniques, explaining their choices.</li> <li>• Select new and reclaimed materials and construction kits to build their structures.</li> <li>• Use simple finishing techniques suitable for the structure they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.</li> <li>• Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.</li> </ul> | <p>of materials in science.</p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product.</li> <li>• Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Order the main stages of making.</li> <li>• Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.</li> <li>• Explain their choice of materials according to functional properties and aesthetic qualities.</li> <li>• Use finishing techniques suitable for the product they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and evaluate a range of existing shell structures including the materials, components</li> </ul> |  | <p>ng of what structures are and how they can be made stronger, stiffer and more stable.</p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.</li> <li>• Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.</li> <li>• Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.</li> <li>• Competently select from</li> </ul> |
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|---|--|--|--|--|---|--|--|
|   |  |  |  | <p>and techniques that have been used.</p> <ul style="list-style-type: none"> <li>• Test and evaluate their own products against design criteria and the intended user and purpose.</li> </ul> |   |  | <p>and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.</p> <ul style="list-style-type: none"> <li>• Use finishing and decorative techniques suitable for the product they are designing and making.</li> </ul> |
| <p><b>T<br/>e<br/>x<br/>t<br/>i<br/>l<br/>e<br/>s</b></p> | <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Explored and used different fabrics.</li> <li>• Cut and joined fabrics with simple techniques.</li> <li>• Thought about the user and purpose of products.</li> </ul> |  | <p><b>Year 2 Templates and Joining Techniques</b></p> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Design a functional and appealing product for a chosen user and purpose based on simple design criteria.</li> <li>• Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Select from and use a range of tools and equipment to</li> </ul> |  | <p><b>Year 4 2D Shape to 3D Shape</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Have joined fabric in simple ways by gluing and stitching.</li> <li>• Have used simple patterns and templates for marking out.</li> <li>• Have evaluated a range of textile products.</li> </ul> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.</li> <li>• Produce annotated sketches, prototypes, final product sketches and pattern pieces.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of making.</li> </ul> | <p><b>Year 5 Combining Different Fabric Shapes</b></p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of basic stitching, joining textiles and finishing techniques.</li> <li>• Experience of making and using simple pattern pieces.</li> </ul> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.</li> <li>• Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.</li> <li>• Design purposeful, functional, appealing products for the</li> </ul> |  |

|  |  |   |  |   |   |  |
|--|--|---|--|---|---|--|
|  |  | <p>perform practical tasks such as marking out, cutting, joining and finishing.</p> <ul style="list-style-type: none"> <li>• Select from and use textiles according to their characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore and evaluate a range of existing textile products relevant to the project being undertaken.</li> <li>• Evaluate their ideas throughout and their final products against original design criteria.</li> </ul> |  | <ul style="list-style-type: none"> <li>• Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.</li> <li>• Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate a range of 3-D textile products relevant to the project.</li> <li>• Test their product against the original design criteria and with the intended user.</li> <li>• Take into account others' views.</li> <li>• Understand how a key event/individual has influenced the development of the chosen product and/or fabric.</li> </ul> | <p>intended user that are fit for purpose based on a simple design specification.</p> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Produce detailed lists of equipment and fabrics relevant to their tasks.</li> <li>• Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</li> <li>• Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and analyse textile products linked to their final product.</li> <li>• Compare the final product to the original design specification.</li> <li>• Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</li> <li>• Consider the views of others to improve their work.</li> </ul> |  |
|--|--|---|--|---|---|--|



## Recording

Evidence from D&T lessons can be recorded through the use of photos and quotes from the children as well as on planning and evaluation sheets.

### Planning and Evaluation Sheets

Children should use a Level 1, Level 2, Level 3 or Level 4 planning and evaluation sheet before and after the design process. It is essential that as the children progress through the school, they have the opportunity to make alterations to their designs and are able to test a variety of designs before choosing the best fit. Children need to be given the chance to reflect on the design process to see how they would improve the product next time or do differently.



KS1



Y3/Y4



Y5/Y6

## EYFS

**Key Stage 1 (Year 1/2):** Complete all of their science and topic learning in one book. It is a light blue covered book from KCS (1268024).

**Key Stage 2 (Year 3/4):** Complete all of their D&T learning on a planning and evaluation sheet which is added to their D&T folder.

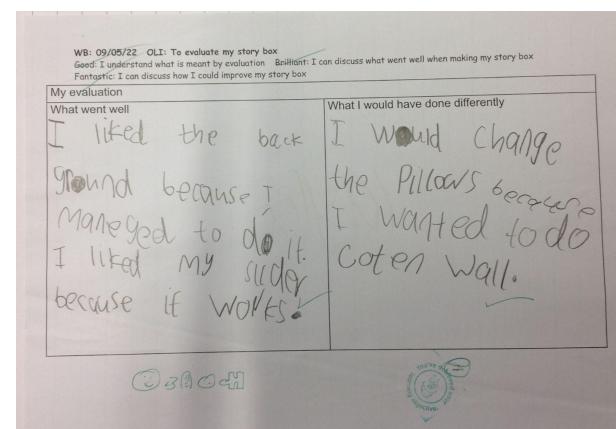
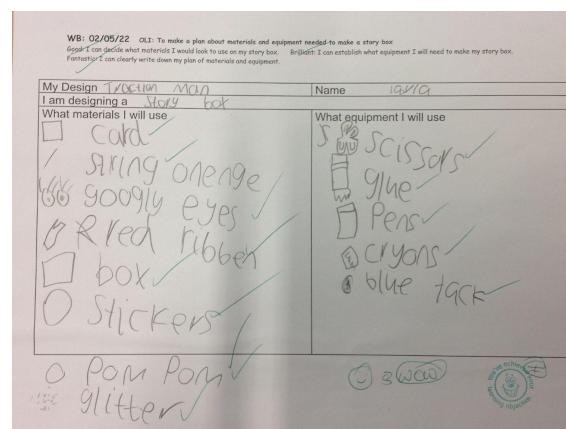
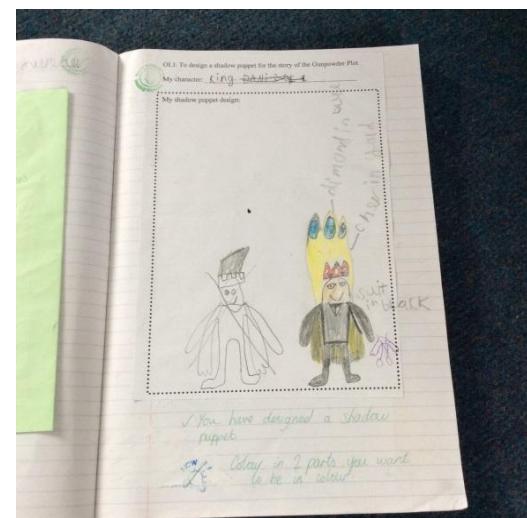
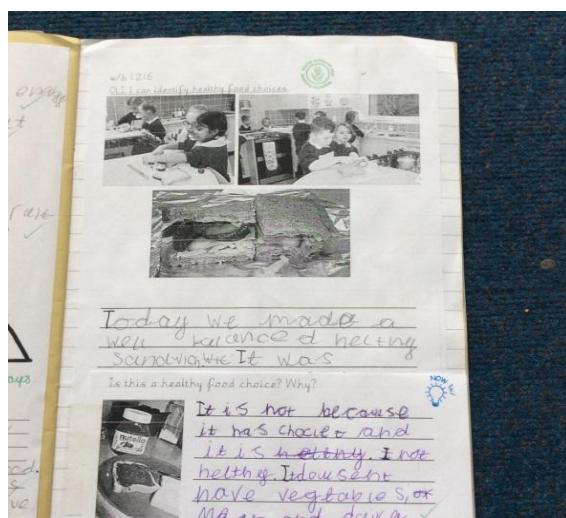
**Upper Key Stage 2 (Year 5/6):** Complete all of their D&T learning on a planning and evaluation sheet which is added to their D&T folder.

**Pre-assessment:** It is crucial in Design and Technology learning to undertake pre-assessment in order to move on children's knowledge and understanding during the design process.

- o In Key Stage 1, this is usually done as a whole class activity, filling out the planning and evaluation sheet together.
- o In Key Stage 2, children will be given more independence throughout the design process. They will fill out their planning and evaluation sheet individually making their plan more personal to their design for their product.
- o In KEY Stage 2, children will also have access to a vocabulary organiser for that topic so that they can use vocabulary related to that concept on their planning and evaluation sheet.

## **Feedback and Marking Design and Technology Work**

All projects must be marked in green pen and according to the Lovelace Marking Policy (see separate document). Children should be given 'Next Step' progressive marking where appropriate and should be given adequate time to respond to that marking when convenient to the class. The planning and evaluation sheets are added to each child's D&T



## **Assessment**

At the end of each series of D&T lessons, teachers should complete a summative assessment sheet with a list of children's names and a short comment on the child's skill and confidence level at the end of the topic. This can be a ticklist or a short comment to say whether the children are below, working towards or have met the criteria for the learning objectives.

## **Mastery**

A child leaving Lovelace Primary School in Year 6 should be able to:

- Use their creativity and imagination, designing and making products to solve relevant, real-life problems, within a variety of contexts and considering their own and others' needs, wants and values.
- Have acquired a broad subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art.
- Be able to take risks, becoming resourceful, innovative, enterprising and capable citizens.
- Have developed a critical understanding of its impact on daily life and the wider world, through the evaluation of past and present design and technology.
- Have developed technical, practical and creative expertise in order to perform tasks confidently and to a high standard.
- Be well-prepared to participate effectively in the increasingly technological world in which they live
- Critique, evaluate and test ideas and products, both their own and the work of others'.
- Understand the principles of nutrition, how to apply them and how to cook.

## **Impact**

Each topic ends with all children creating a final product; these products are a fantastic way for children to demonstrate the skills they have learnt. Throughout the school, children are given the opportunity to consolidate their skills by creating their final product independently. Each lesson builds on the previous and children's skills are improved upon throughout each topic. It is also clear to see the progression of skills throughout the school through the quality of products each year group creates. Subject and school leaders monitor the impact of our curriculum provision through completing regular monitoring, that includes listening to the voice of our children.



## Links to the 101 Must Have Lovelace Learning Experiences

|                              |   |
|------------------------------|---|
| <b>Silver Yr 1 &amp; 2</b>   | -Build and create with a range of materials.<br>-Make a model using recycled materials. |
| <b>Gold Yr 3 &amp; 4</b>     | -Create an exploding volcano.<br>-Build a replica Viking Boat.                          |
| <b>Platinum Yr 5 &amp; 6</b> | -Sew on a button/sew up a hole.<br>-Make a home for a wild animal.                      |

## Useful Resources

### D&T Dictionary

[https://drive.google.com/file/d/1r1sOn3MTGNSF0242RHgF3PsOK5q9sqfl/view?usp=share\\_link](https://drive.google.com/file/d/1r1sOn3MTGNSF0242RHgF3PsOK5q9sqfl/view?usp=share_link)

### MTP Exemplar

[https://docs.google.com/document/d/1H15QULjKjCvPGa8zRwWAI8vaafX2WuLe/edit?usp=share\\_link&ouid=103039079261666016505&rtpof=true&sd=true](https://docs.google.com/document/d/1H15QULjKjCvPGa8zRwWAI8vaafX2WuLe/edit?usp=share_link&ouid=103039079261666016505&rtpof=true&sd=true)

► Tools, Equipment and Materials. (How to use certain resources and why)



# **Design and Technology: Cookery**

## **The Lovelace Way**

### **Intent**

At Lovelace we are fortunate to have our own cookery room and therefore our intent for cookery is to provide all children with the opportunity to access the cooking room to make a variety of different recipes. From Nursery to year 6 the children will learn new skills, building on them each year. It is a great opportunity for the children to explore food and have a chance to try something new. The children will also learn about the importance of food, how to keep healthy and what a balanced diet is.

In the Early years they follow the development matters which states:

### **Personal, social and Emotional development**

**Age 3-4:** Make healthy choices about food, drink, activity and toothbrushing

**Reception:** Know and talk about the different factors that support their overall health and wellbeing: • regular physical activity • **healthy eating** • toothbrushing • sensible amounts of 'screen time' • having a good sleep routine • being a safe pedestrian

All years groups from year 1 to year 6 follow the national curriculum which states:

### **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.

### **Implementation**

The children develop their cooking skills and knowledge through one practical cooking lesson in the year and food knowledge through science lessons in another term of the year.

|            |             |             |             |
|------------|-------------|-------------|-------------|
| Year group | Autumn term | Spring term | Summer term |
|------------|-------------|-------------|-------------|

|           |  |   |  |
|-----------|--|---|--|
| Nursery   | Making a basic sandwich                            | Easter nests  | Fruit salad                                      |
| Reception |  | Gingerbread men                                     | Smoothies and soup- part of healthy eating topic |
| Year 1    |  | Fruit kebabs  |  |
| Year 2    |  | Healthy hero sandwich<br>Sorting food/healthy plate |  |
| Year 3    |  |   |  |
| Year 4    | Christmas biscuits                                 |   |  |
| Year 5    |  |   |  |
| Year 6    | Palmiers<br>Croissants<br>Croque monsieur & madame |   |  |

Each year group has a project on a page that they follow to help guide their cooking lessons. See individual year groups for subject planning.

Here is an example of a project on a page

|  |  |   |   |  |   |   |  |  |  |   |
|--|--|---|---|--|---|---|--|--|--|---|
| <b>1. Year Groups</b><br><b>Years 1/2</b>  | <b>2. Aspect of D&amp;T</b><br><b>Food</b><br><b>Focus</b><br><b>Preparing fruit and vegetables</b>  | <b>4. What could children design, make and evaluate?</b><br>But salads fruit yogurt fruit drinks fruit smoothies fruit juice vegetables salads fruit and vegetable kebabs other - specify | <b>5. Intended users</b><br>themselves parents siblings grandparents friends peers at school younger/older children visitors other - specify  | <b>6. Purpose of products</b><br>picnic celebration party school event picnic day pleasure cafe corner other - specify   | <b>16. Possible resources</b><br>range of fresh fruit and vegetables chopping boards, knives, peelers, graters, skewers, juicers, aprons, jugs, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities yogurt making machine or blender, if appropriate  | <b>17. Key vocabulary</b><br>fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, tart, delicious, appealing, popular, design, evaluate, criteria  |  |  |  |   |
| <b>3. Key learning in design and technology</b><br><b>Prior learning</b><br>• Experience of common fruit and vegetables, taste and smell.<br>• Experience of cutting soft fruit and vegetables using appropriate utensils.<br><b>Making</b><br>• Design and creating products for a particular user, e.g. an empty design criteria.<br>• Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. Communicate these ideas through talk and drawings.<br><b>Evaluation</b><br>• Test and evaluate a range of fruit and vegetables to determine the intended user's preferences.<br>• Evaluate ideas and finished products against design criteria, including intended user and making. | <b>7. Links to topics and themes</b><br>Healthy Eating Festivals and Celebrations<br>Teddy Bear Picnic Food and Farming<br>Ourselves Senses Growing<br>other - specify | <b>8. Possible contexts</b><br>home school garden playgrounds local community culture industry other - specify  | <b>9. Project title</b><br>Design, make and evaluate a _____ (product) _____ (user) _____ (purpose)<br>To be completed by the teacher. Use the project title to set the scene for children's learning prior to activities in 10, 12 and 14. | <b>10. Investigative and Evaluative Activities (IEAs)</b><br>• Children explore a range of fruit/vegetables. Use questions to develop children's understanding, e.g. What is this called? Who has eaten this fruit/vegetable before? Where is it grown? When can it be harvested? What are its taste, smell, texture and appearance? What will it look like if we peel it or cut it in half? What happens if we cut it in different ways?<br>• Provide opportunities for children to handle, smell and taste fruit and vegetables in order to describe them through talking and drawing, e.g. What words can we use to describe the shape, colour, taste, smell and texture?<br>• Evaluate existing products to determine the what the children like best; provide opportunities for the children to investigate preferences of their intended user/audience for intended purposes e.g. What do you like about this product? What do you think makes it good? What are the best parts? Which fruit/vegetables might be the best for our product to match the occasion/purpose? | <b>11. Related learning in other subjects</b><br><b>Science</b> - understand that plants have leaves, stems, roots, flowers and fruits; understand the importance of growing plants and how seasons affect this.<br><b>Spoken language</b> - children develop and use a sensory vocabulary.<br><b>Writing</b> - children develop descriptive writing based on first-hand experience of tasting fruit and vegetables.<br><b>Information and communication technology</b> - simple survey to find out which are the favourites.<br><b>Design and technology</b> - construct and interpret the information in e.g. photographs and bar graphs. | <b>12. Focused Tasks (FTs)</b><br>• Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. What should we do before we work with food? Why is following instructions important?<br>• Demonstrate how to use simple utensils and provide opportunities for the children to practise food-processing skills such as washing, grating, peeling, slicing, squeezing e.g. Do we eat the whole fruit? Why do we wash fruit? What happens if we wash fruit? Why do we wash fruit? Why do we cut, grate, peel and slice in this way? Discuss different effects achieved by different processes.<br>• Discuss healthy eating advice, including eating more fruit and vegetables; using The Eatwell Plate model to support this. Encourage children to eat a variety of fruit and vegetables. Why is it good to eat fruit and vegetables? How many pieces of fruit/vegetables do you eat per day? Why is it important to wash fruit/vegetables before we eat them? | <b>13. Related learning in other subjects</b><br><b>Spoken language</b> - ask questions to check understanding of the correct terminology for food and eating.<br><b>Writing</b> - instructions on how to use one of the utensils.<br><b>Science</b> - eat a balanced diet, different types of food and hygiene. | <b>14. Design, Make and Evaluate Assignment (DMEA)</b><br>• Set a context for designing and making which is authentic and meaningful.<br>• Discuss with the children the possible products that they might want to design, make and evaluate and who the product will be for. Agree on design criteria can be used to guide the development and evaluation of children's products. Consider the product and its purpose, who it is for and make a product unique/different? How will we know that we designed and made a successful product?<br>• Use talk and drawings when working for a product; ask the children to develop, model and communicate their ideas. What is it? Who is it for? What fruit/vegetable will you need? What will you need? How will you present the product?<br>• Talk to the children about the main stages in making, considering appropriate utensils and food products. This can be done through the Focused Tasks (FTs).<br>• Evaluate as the children work through the project and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed. | <b>15. Related learning in other subjects</b><br><b>Spoken language</b> - ask questions to develop and check understanding, develop technical vocabulary and build knowledge.<br><b>Art and design</b> - use and develop drawing skills.<br><b>Writing</b> - discuss and write a simple account about the project.<br><b>Computing</b> - use digital photographs to help under the main stages of making and support children's writing. | <b>18. Key competencies</b><br>problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other - specify |
| <b>19. Health and safety</b><br>Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients safely and competently. Pupils should be taught to evaluate the risks and benefits of their project and risk assessments should be carried out, including testing to see whether there are children who are not permitted to taste or handle any food ingredients or products.   |  |   |   |  | <b>20. Overall potential of project</b><br>   |   |  |  |  |   |

We are currently working towards a bronze award for Healthy Early London and we have achieved a Gold award in healthy schools.

## **Progression of Skills in Cooking**

| Year groups  | Skills  |
|--|---|
| <b>Stage 1</b><br><b>Nursery and Reception</b><br>(all with supervision)                   | Weighing out ingredients<br>Cutting soft foods using safe knives e.g. fruit, bread, mushrooms<br>Mixing<br>Tearing – herbs<br>Sieving<br>Rolling<br>Spreading |
| <b>Stage 2</b><br><b>Years 1 and Years 2</b><br>Should be able to do all in stage 1        | Cutting more foods (still using safe knives) using the claw method to hold food<br>Grating – cheese, vegetables etc<br>Rubbing in ingredients<br>Whisking     |
| <b>Stage 3</b><br><b>Years 3 and Year 4</b><br>Should be able to do all in stage 1 and 2   | Peeling veg<br>Using a tin opener<br>Using equipment like blenders etc  |
| <b>Stage 4</b><br><b>Year 5 and Year 6</b><br>Should be able to do all in stages 1,2 and 3 | Using the ovens in pairs<br>Using the hob   |

## **Assessment**

At the end of the cooking project the children evaluate what they have done, learnt and achieved, so from this we can assess how well they have understood the learning objective and if they have achieved it.

## **Impact**

From all the cooking experiences the children have during their time at Lovelace a child leaving Lovelace in Year 6 should be able to:

- Understand the principles of nutrition, how to apply them and how to use this to cook.
- To use a variety of equipment safely and effectively when cooking e.g graters, knives, oven, hob
- To plan and prepare a meal
- Understands where food comes from and how it is sourced

- Knows that some food is only available at certain times of the year
- Knows what is needed for a healthy lifestyle