

Charmouth Primary School Subject Stories:

## Design Technology

### Intent

At Charmouth Primary, we intend Design and Technology to be creative and practical. DT learning will provide children with the chance to problem solve and develop their own creative ideas, both as



individuals and as part of a team. We aim to provide our children with opportunities to use their imagination to design and make products within a variety of contexts, giving motivation and meaning to their learning.

Children will be taught a range of topics including; mechanisms, textiles, food technology, structures, and electrical systems (in Key Stage 2). Through hands-on, practical experiences we aim for children to leave Year 6 with knowledge and skills of DT which will inspire children to be chefs, engineers, sculptures, carpenters, designers and architects. We recognise the important role of DT in preparing our children with skills for life which will enable them to be creative individuals as they aspire, flourish and achieve.

DT is taught in an inclusive way. For pupils with additional needs, there will be every opportunity to work towards the overall objectives of the year group. Pupils may be supported by simplified equipment or activities, or through additional modelling of skills from adults or peers. High expectations will challenge all children to meet their personal targets.

### The National Curriculum Aims for DT

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 Technology within Early Years – Creating with Materials

## Nursery – Opportunities provided through continuous provision

Expressive Arts and Design is delivered in Nursery with a focus on:

- Imagination and creativity
- Self-expression
- Communicating through arts

## Reception – Planning and provision is guided by the Educational Programme for Expressive Arts and Design.

The endpoint for EYFS is the Early Learning Goal for Expressive Arts and Design – Creating with Materials

- Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Children share their creations, explaining the process they have used.

Examples of opportunities provided through both continuous provision and direct teach.

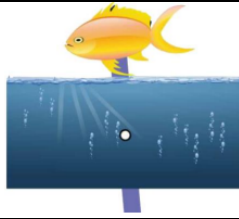
<p><b>Autumn 1</b></p> <p>All About Me!</p>	<ul style="list-style-type: none"> <li>• Design a house with construction materials.</li> <li>• Make simple finger puppets.</li> <li>• Create a superhero mask.</li> <li>• Develop fine motor skills with nuts and bolts.</li> </ul>
<p><b>Autumn 2</b></p> <p>Terrific Tales</p>	<ul style="list-style-type: none"> <li>• Create colourful Rama / Sita stick puppets.</li> <li>• Use different textures and materials to make houses for the 3 little pigs.</li> <li>• Make Troll sock puppets.</li> <li>• Cut out the parts and put the gingerbread man together using split pins.</li> <li>• Make castle models in small world.</li> </ul>
<p><b>Spring 1</b></p> <p>Amazing Animals</p>	<ul style="list-style-type: none"> <li>• Create animal shadow puppets.</li> <li>• Create safari binoculars – different types of fastenings with toilet rolls.</li> <li>• Design The Best Zoo in the world on large paper – use the term architect</li> <li>• Make milk carton elephants</li> </ul>
<p><b>Spring 2</b></p> <p>Come Outside</p>	<ul style="list-style-type: none"> <li>• Taste lettuce, cucumber, tomato, carrot, onion and peppers. Tick or cross next to each food item on the research sheet to show whether they like the foods tastes</li> <li>• Make soup.</li> <li>• Build a bug hotel.</li> <li>• Make paper plate weather charts.</li> </ul>
<p><b>Summer 1</b></p>	<ul style="list-style-type: none"> <li>• Design and make rockets. Design and make objects they may need in space, thinking about form and function.</li> </ul>

Ticket to Ride	<ul style="list-style-type: none"> <li>Design your own future car / vehicle. Gather range of large boxes, tubes, wheels etc... to create role play transport areas – Deconstructed Roleplay</li> </ul>
	<ul style="list-style-type: none"> <li>Make cork boats using elastic bands, cocktail sticks and corks including using a design sheet. Build bridges and roads with wooden blocks.</li> </ul>
	<ul style="list-style-type: none"> <li>Make boats/windmills/rain shakers.</li> </ul>
Summer 2  Fun at the Seaside	<ul style="list-style-type: none"> <li>Design an ice-cream sundae</li> </ul>
	<ul style="list-style-type: none"> <li>Use ropes and pulleys to create the scene from the story</li> <li>Create circuits to light the house: wires, batteries and bulbs</li> </ul>
	<ul style="list-style-type: none"> <li>Create kites using canes and crepe paper</li> </ul>
	<ul style="list-style-type: none"> <li>Design your own pier: what would it contain?</li> </ul>

**Curriculum Map (Years 1 to 6)**

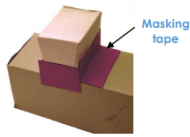
Food Structures Mechanisms Textiles

	Autumn	Spring	Summer
Year 1/2 A	Preparing fruit and vegetables (Fruit smoothie)	Sliders and levers (Explorers - History link)	Templates and joining (Puppets)

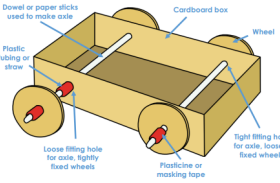


Year 1/2 B

Freestanding structures  
(Houses of Parliament - History link)



Wheels and axles  
(Toy cars - History link)



Preparing fruit and vegetables  
(Fruit salad - Geography link)



Year 3/4 A

Shell structures  
(Gift boxes)



Pneumatics  
(Traps/ hunting/ moving animals)



Simple circuits/ switches  
(Night lights)



Year 3/4 B

Healthy and varied diet  
(Wraps/pittas)



Levers and linkages  
(Moving storybook)



2D shape to 3D product  
(links to Uganda in Geography)



Year 5/6 A

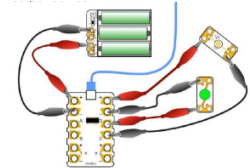
Cams  
(Viking Ships - link to History)



Combining fabric shapes  
(Fabric Doorstop)

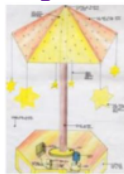


Monitoring and control /electrical systems  
(Alarms)



Year 5/6 B

Pulleys and gears  
(Fairgrounds)




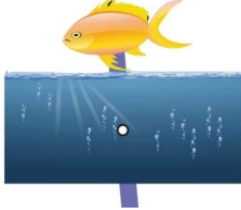

Frame structures  
(Shelters - link to History)



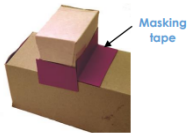
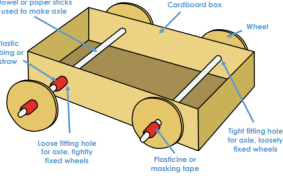

Culture and seasonality  
(Pizza/biscuits/scones)





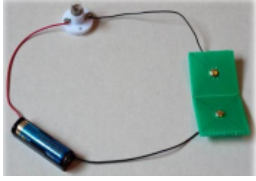
## Knowledge and Skills: Year 1/2 A

Food	Mechanisms	Textiles
<p>Preparing fruit and vegetables (Fruit smoothie)</p> 	<p>Sliders and levers (Explorers - History link)</p> 	<p>Templates and joining (Puppets)</p> 
<p><b>NATIONAL CURRICULUM COVERAGE:</b></p> <ul style="list-style-type: none"> <li>- KS1 Cooking and Nutrition: Understand where food comes from.</li> </ul>	<p><b>NATIONAL CURRICULUM COVERAGE:</b></p> <ul style="list-style-type: none"> <li>- KS1 Technical Knowledge: Explore and use mechanisms (eg levers and sliders) in their products.</li> </ul>	<p><b>NATIONAL CURRICULUM COVERAGE:</b></p> <ul style="list-style-type: none"> <li>- KS1 Make: Select from and use a range of tools and equipment for practical tasks (eg cutting, joining).</li> <li>- KS1 Make: Select from and use wide range of textiles, according to their characteristics.</li> </ul>
<p><b>SUBSTANTIVE KNOWLEDGE:</b></p> <p><b>I KNOW</b> where a range of fruit and vegetables come from e.g. farmed or grown at home.</p> <p><b>I CAN</b> use simple utensils and equipment to e.g. cut, slice, squeeze safely.</p> <p><b>I CAN</b> select from a range of fruit and vegetables according to their characteristics e.g. colour, taste to create a chosen product.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b></p> <p><b>I CAN</b> explore and use sliders and levers.</p> <p><b>I KNOW</b> that different mechanisms produce different types of movement.</p> <p><b>I CAN</b> select and use tools, explaining their choices, to cut, shape and join paper and card.</p> <p><b>I CAN</b> use simple finishing techniques suitable for the product I am creating.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b></p> <p><b>I KNOW</b> how simple 3-D textile products are made, using a template to create two identical shapes.</p> <p><b>I CAN</b> select from and use textiles according to their characteristics.</p> <p><b>I KNOW HOW TO</b> join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.</p> <p><b>I CAN</b> explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.</p>
<p><b>DISCIPLINARY KNOWLEDGE:</b></p> <p><b>I CAN</b> communicate my ideas through talk and drawings.</p> <p><b>I CAN</b> taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b></p> <p><b>I CAN</b> develop, model and communicate my ideas through drawings and mock-ups with card and paper.</p> <p><b>I CAN</b> plan by suggesting what to do next.</p> <p><b>I CAN</b> explore a range of existing books and everyday products that use simple sliders and levers.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b></p> <p><b>I CAN</b> design a functional and appealing product for a chosen user and purpose based on simple design criteria.</p> <p><b>I CAN</b> evaluate my ideas throughout and my final product against the original design criteria.</p>
<p><b>DESIGNER/INVENTOR/CHEF</b></p> <p><b>Chef:</b> Nadiya Hussain</p>	<p><b>DESIGNER/INVENTOR/CHEF</b></p> <p><b>Designer</b> of interactive pop up books: Robert Sabuda</p>	<p><b>DESIGNER/INVENTOR/CHEF</b></p> <p><b>Inventor</b> of the safety jacket (1930): Bob Switzer</p>

**Knowledge and Skills: Year 1/2 B**

Structure	Mechanisms	Food
<p>Freestanding structures (Houses of Parliament - History link)</p> 	<p>Wheels and axles (Toy cars - History link)</p> 	<p>Preparing fruit and vegetables (Fruit salad - Geography link)</p> 
<p><b>NATIONAL CURRICULUM COVERAGE:</b> -KS1 Technical Knowledge: Build structures, exploring how they can be made stronger, stiffer and more stable - KS1 Make: Select from and use wide range of construction materials, according to their characteristics.</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS1 Technical Knowledge: Explore and use mechanisms (eg wheels and axles) in their products. - KS1 Make: Select from and use a range of tools and equipment for practical tasks (eg shaping, finishing).</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS1 Cooking and nutrition: Use the basic principles of a healthy and varied diet to prepare dishes. - KS1 Make: Select from and use wide range of ingredients, according to their characteristics.</p>
<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I KNOW HOW TO</b> make freestanding structures stronger, stiffer and more stable. <b>I CAN</b> select new and reclaimed materials and construction kits to build my structures. <b>I CAN</b> use simple finishing techniques suitable for the structure I am creating.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I CAN</b> explore and use wheels, axles and axle holders. <b>I KNOW</b> the difference between fixed and freely moving axles. <b>I CAN</b> select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I KNOW</b> and use basic principles of a healthy diet to prepare dishes, including how fruit and vegetables are part of The eatwell plate. <b>I CAN</b> use simple utensils and equipment to e.g. peel, grate, chop. <b>I CAN</b> select from a range of fruit and vegetables according to their characteristics e.g. texture to create a chosen product.</p>
<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> generate ideas based on simple design criteria and my own experiences, explaining what I could make. <b>I CAN</b> evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> develop and communicate ideas through drawings, templates and mock-ups (using ICT where appropriate). <b>I CAN</b> explore and evaluate a range of products with wheels and axles.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> generate initial ideas and design criteria through investigating a variety of fruit and vegetables. <b>I CAN</b> evaluate ideas and finished products against design criteria, including intended user and purpose.</p>
<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Architect</b> of Houses of Parliament: Charles Barry</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Inventor</b> of the Ford Motor Car company: Henry Ford</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Chef:</b> Omari Mcqueen</p>

**Knowledge and Skills: Year 3/4 A**



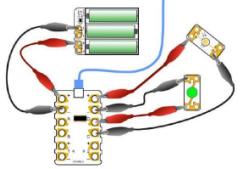
Structure	Mechanisms	Mechanisms
<p>Shell structures (Gift boxes)</p> 	<p>Pneumatics (Traps/ hunting/ moving animals)</p> 	<p>Simple circuits/ switches (Night lights)</p> 
<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Make: Select from and use a wider range of tools and equipment to perform practical tasks accurately (eg for cutting, shaping, joining and finishing)</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Technical Knowledge: Understand and use mechanical systems in their products.</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Technical Knowledge: Understand and use electrical systems in their products (eg series circuits with switches, bulbs and buzzers)</p>
<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I CAN</b> use knowledge of nets of cubes and cuboids and some more complex 3D shapes. <b>I KNOW</b> how to construct strong, stiff shell structures. <b>I CAN</b> select and use appropriate tools and software to measure, mark out, cut, score, shape and assemble with some accuracy. <b>I CAN</b> use computer-generated finishing techniques suitable for the product I am creating.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I UNDERSTAND</b> and can use pneumatic mechanisms. <b>I CAN</b> select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I UNDERSTAND</b> and use electrical systems in products, such as series circuits incorporating switches, bulbs and buzzers. <b>I CAN</b> apply my understanding of computing to program and control my products. <b>I KNOW</b> how key inventors helped shape the world.</p>
<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> develop ideas through the analysis of existing shell structures and use computer-aided design to model and communicate ideas. <b>I CAN</b> explain my choice of materials according to functional properties and aesthetic qualities.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I KNOW HOW TO</b> use annotated sketches and prototypes to develop, model and communicate ideas. <b>I CAN</b> order the main stages of making. <b>I CAN</b> evaluate my own products and ideas against criteria.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> 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. <b>I CAN</b> evaluate ideas and products against my design criteria and identify the strengths and areas for improvement in my work.</p>
<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Inventor</b> of the folding carton: Robert Gair</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Inventor</b> of the pneumatic drill: Samuel Ingersoll</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Inventor</b> of the lightbulb: Thomas Edison <b>Inventor</b> of the filament: Lewis Latimer</p>

**Knowledge and Skills: Year 3/4 B**

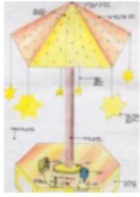


Food	Mechanisms	Textiles
<p>Healthy and varied diet (Wraps/pittas)</p> 	<p>Levers and linkages (Moving storybook)</p> 	<p>2D shape to 3D product (links to Uganda in Geography)</p> 
<p><b>NATIONAL CURRICULUM COVERAGE:</b></p> <ul style="list-style-type: none"> <li>- KS2 Cooking and nutrition: Understand and apply the principles of a healthy and varied diet.</li> <li>- KS2 Make: Select from wider range of ingredients according to their functional properties and aesthetic qualities.</li> </ul>	<p><b>NATIONAL CURRICULUM COVERAGE:</b></p> <ul style="list-style-type: none"> <li>- KS2 Technical Knowledge: Understand and use mechanical systems in their products (eg levers and linkages)</li> </ul>	<p><b>NATIONAL CURRICULUM COVERAGE:</b></p> <ul style="list-style-type: none"> <li>- KS2 Make: Select from wider range of textiles, according to their functional properties and aesthetic qualities.</li> </ul>
<p><b>SUBSTANTIVE KNOWLEDGE:</b></p> <p><b>I KNOW HOW TO</b> use appropriate equipment and utensils to prepare and combine food.</p> <p><b>I KNOW</b> about a range of fresh and processed ingredients, and whether they are grown, reared or caught.</p> <p><b>I CAN</b> plan the main stages of a recipe, listing ingredients, utensils and equipment.</p> <p><b>I CAN</b> select and use appropriate utensils and equipment to prepare and combine ingredients.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b></p> <p><b>I UNDERSTAND</b> and use lever and linkage mechanisms.</p> <p><b>I CAN</b> distinguish between fixed and loose pivots.</p> <p><b>I CAN</b> select from and use appropriate tools with some accuracy to cut, shape and join paper and card.</p> <p><b>I CAN</b> select from and use finishing techniques suitable for my product.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b></p> <p><b>I KNOW HOW TO</b> strengthen, stiffen and reinforce existing fabrics.</p> <p><b>I KNOW HOW TO</b> securely join two pieces of fabric together.</p> <p><b>I UNDERSTAND</b> the need for patterns and seam allowances.</p> <p><b>I CAN</b> select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</p>
<p><b>DISCIPLINARY KNOWLEDGE:</b></p> <p><b>I CAN</b> generate design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.</p> <p><b>I CAN</b> carry out sensory evaluations of a variety of ingredients/products and record the evaluations using e.g. tables and simple graphs.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b></p> <p><b>I CAN</b> use annotated sketches and prototypes to develop, model and communicate ideas.</p> <p><b>I CAN</b> investigate and analyse books and, where available, other products with lever and linkage mechanisms.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b></p> <p><b>I CAN</b> produce annotated sketches, prototypes, final product sketches and pattern pieces.</p> <p><b>I CAN</b> test my product against the original design criteria and with the intended user.</p>
<p><b>DESIGNER/INVENTOR/CHEF</b></p> <p><b>Chef:</b> Thomas and Ellen Warburton</p>	<p><b>DESIGNER/INVENTOR/CHEF</b></p> <p><b>Designer</b> of pop-up and moving books: Jan Pieńkowski</p>	<p><b>DESIGNER/INVENTOR/CHEF</b></p> <p><b>Inventor</b> of sewing machine: Elias Howe</p>



**Knowledge and Skills: Year 5/6 A**

Mechanisms	Textiles	Mechanisms
<p style="text-align: center;">Cams (Viking Ships - link to History)</p> 	<p style="text-align: center;">Combining fabric shapes (Fabric Doorstop)</p> 	<p style="text-align: center;">Monitoring and control /electrical systems (Alarms)</p> 
<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Technical Knowledge: Understand and use mechanical systems in their products (eg cams)</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Make: Select wider range of tools and equipment to cut, shape, join and finish accurately.</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Technical Knowledge: Apply their understanding of computing to program, monitor and control their products.</p>
<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I KNOW</b> that mechanical systems have an input, process and an output. <b>I KNOW</b> how cams can be used to produce different types of movement and change the direction of movement.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I CAN</b> make a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. <b>I KNOW</b> how to strengthen, stiffen and reinforce fabrics where appropriate.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I UNDERSTAND</b> and use electrical systems in my products. <b>I CAN</b> use computer control systems in a product. <b>I CAN</b> select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. <b>I CAN</b> create and modify a computer control program to enable an electrical product to respond to changes in the environment.</p>
<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. <b>I CAN</b> produce detailed lists of tools, equipment and materials and formulate step-by-step plans. <b>I CAN</b> consider the views of others to improve my work.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. <b>I CAN</b> test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> develop a design specification for a functional product that responds automatically to changes in the environment. <b>I CAN</b> test the system to demonstrate its effectiveness for the intended user and purpose.</p>
<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Inventor</b> of the Chubb lock: Charles Chubb</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Designer:</b> Stella McCartney</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Designer</b> of the home security system: Mary Van Brittan Brown</p>

**Knowledge and Skills: Year 5/6 B**

Mechanisms	Structure	Food
<p>Pulleys and gears (Fairgrounds)</p> 	<p>Frame structures (Shelters - link to History)</p> 	<p>Culture and seasonality (Pizza/biscuits/ scones)</p> 
<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Technical Knowledge: Understand and use mechanical systems in their products (eg gears and pulleys)</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Technical Knowledge: Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. - KS2 Make: Select from wider range of construction materials according to functional properties and aesthetic qualities.</p>	<p><b>NATIONAL CURRICULUM COVERAGE:</b> - KS2 Cooking and nutrition: 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.</p>
<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I KNOW</b> that mechanical systems have an input, process and an output. <b>I KNOW</b> how gears and pulleys can be used to speed up, slow down or change the direction of movement. <b>I KNOW</b> how Archimedes' discoveries with pulleys helped to shape the world.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I KNOW HOW TO</b> strengthen, stiffen and reinforce 3-D frameworks. <b>I CAN</b> accurately measure, mark out, cut, shape and join construction materials to make frameworks. <b>I CAN</b> use finishing and decorative techniques suitable for the product.</p>	<p><b>SUBSTANTIVE KNOWLEDGE:</b> <b>I KNOW HOW TO</b> use utensils and equipment including heat sources to prepare and cook food. <b>I KNOW</b> about seasonality in relation to food products and the source of different food products. <b>I CAN</b> make, decorate and present the food product appropriately for the intended user and purpose.</p>
<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> develop and communicate ideas through discussion, annotated drawings, exploded drawings and cross-sectional diagrams. <b>I CAN</b> select from and use a range of tools and equipment to make products that are well assembled and well finished. <b>I CAN</b> test products with intended user; evaluate the quality of the design, manufacture, functionality and fitness for purpose.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. <b>I CAN</b> formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. <b>I CAN</b> critically evaluate their products against the design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.</p>	<p><b>DISCIPLINARY KNOWLEDGE:</b> <b>I CAN</b> explore a range of initial ideas, and make design decisions to develop a final product linked to user &amp; purpose. <b>I CAN</b> carry out sensory evaluations of a range of relevant products and ingredients, and record the evaluations using e.g. tables/graphs/charts such as star diagrams.</p>
<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Inventors</b> of pulley systems for lifts: Archimedes</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Designers</b> of Anderson shelter: William Paterson and Oscar Carl Kerrison</p>	<p><b>DESIGNER/INVENTOR/CHEF</b> <b>Chef:</b> Alice Waters</p>

**Progression by Area: DESIGNING**

EYFS	Year 1/2	Year 3/4	Year 5/6
<p>Design products for a specific person or reason, including using story contexts (eg a new bed for Baby Bear).</p> <p>Talk about what they are planning to make with adults and peers.</p>	<p>Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment.</p> <p>State what products they are designing and making.</p> <p>Say whether their products are for themselves or other users.</p> <p>Describe what their products are for.</p> <p>Say how their products will work.</p> <p>Say how they will make their products suitable for their intended users.</p> <p>Use simple design criteria to help develop their ideas.</p> <p>Generate ideas by drawing on their own experiences.</p> <p>Use knowledge of existing products to help come up with ideas.</p> <p>Develop and communicate ideas by talking and drawing.</p> <p>Model ideas by exploring materials, components and construction kits and by making templates and mock-ups.</p> <p>Use information and communication technology, where appropriate, to develop and communicate their ideas.</p>	<p>Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.</p> <p>Describe the purpose of their products.</p> <p>Explain how particular parts of their products work.</p> <p>Gather information about the needs and wants of particular individuals and groups.</p> <p>Develop their own design criteria and use these to inform their ideas.</p> <p>Generate realistic ideas, focusing on the needs of the user.</p> <p>Make design decisions that take account of the availability of resources.</p> <p>Share and clarify ideas through discussion.</p> <p>Model their ideas using prototypes and pattern pieces.</p>	<p>Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment.</p> <p>Carry out research, using surveys, interviews, questionnaires and web-based resources.</p> <p>Identify the needs, wants, preferences and values of particular individuals and groups.</p> <p>Develop a simple design specification to guide their thinking.</p> <p>Indicate the design features of their products that will appeal to intended users.</p> <p>Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas.</p> <p>Use computer-aided design to develop and communicate their ideas.</p> <p>Generate innovative ideas, drawing on research.</p> <p>Make design decisions, taking account of constraints such as time, resources and cost.</p>

## Progression by Area: MAKING

EYFS	Year 1/2	Year 3/4	Year 5/6
<p>Cut, shape and join using scissors, glue, paper fasteners, hole punches and masking tape.</p> <p>Explore and use different fabric.</p> <p>Cut and join fabrics with simple techniques.</p>	<p>Plan by suggesting what to do next.</p> <p>Select from a range of tools and equipment, explaining their choices.</p> <p>Select from a range of materials and components according to their characteristics.</p> <p>Follow procedures for safety and hygiene.</p> <p>Use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components.</p> <p>Measure, mark out, cut and shape materials and components.</p> <p>Assemble, join and combine materials and components.</p> <p>Use finishing techniques, including those from art and design.</p>	<p>Select tools and equipment suitable for the task.</p> <p>Explain their choice of tools and equipment in relation to the skills and techniques they will be using.</p> <p>Order the main stages of making.</p> <p>Use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components.</p> <p>Measure, mark out, cut and shape materials and components with some accuracy.</p> <p>Assemble, join and combine materials and components with some accuracy.</p> <p>Apply a range of finishing techniques, including those from art and design, with some accuracy.</p>	<p>Select materials and components suitable for the task.</p> <p>Explain their choice of materials and components according to functional properties and aesthetic qualities.</p> <p>Produce appropriate lists of tools, equipment and materials that they need.</p> <p>Formulate step-by-step plans as a guide to making.</p> <p>Use a wider range of materials and components than Lower KS2, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components.</p> <p>Accurately measure, mark out, cut and shape materials and components.</p> <p>Accurately assemble, join and combine materials and components.</p> <p>Accurately apply a range of finishing techniques, including those from art and design.</p> <p>Use techniques that involve a number of steps.</p> <p>Demonstrate resourcefulness when tackling practical problems.</p>

**Progression by Area: EVALUATING**

EYFS	Year 1/2	Year 3/4	Year 5/6
<p>Talk about what they like and are proud of in their products.</p> <p>Evaluate whether the product is fit for the intended user or purpose (including within a story context).</p>	<p>Talk about their design ideas and what they are making.</p> <p>Make simple judgements about their products and ideas against design criteria.</p> <p>Suggest how their products could be improved.</p> <p>In exploring existing products, children explore:</p> <ul style="list-style-type: none"> <li>- what and who products are for</li> <li>- how products work</li> <li>- how and where products might be used</li> <li>- what materials products are made from</li> <li>- what they like and dislike about the products</li> </ul>	<p>Identify the strengths and areas for development in their ideas and products.</p> <p>Refer to their design criteria as they design and make.</p> <p>Use their design criteria to evaluate their completed products.</p> <p>In exploring existing products, children explore:</p> <ul style="list-style-type: none"> <li>- how well products have been designed and made</li> <li>- why materials have been chosen and what methods of construction have been used</li> <li>- who designed and made the products</li> <li>- where and when products were designed and made</li> <li>- whether products can be recycled or reused</li> </ul> <p>Know about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products</p>	<p>Consider the views of others, including intended users, to improve their work.</p> <p>Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make.</p> <p>Evaluate their ideas and products against their original design specification.</p> <p>In exploring existing products, children explore:</p> <ul style="list-style-type: none"> <li>- how well products work</li> <li>- how well products achieve their purposes</li> <li>- how well products meet user needs and wants</li> <li>- how much products cost to make</li> <li>- how innovative products are</li> <li>- how sustainable the materials in products are</li> <li>- what impact products have beyond their intended purpose</li> </ul> <p>Know about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products</p>

**Progression by Area: TECHNICAL KNOWLEDGE**

EYFS	Year 1/2	Year 3/4	Year 5/6
<p>Know how to use paper and card to make simple flaps and hinges.</p> <p>Know how to use construction kits (eg Lego, Duplo) to build walls and towers.</p> <p>Know different methods for joining card and paper.</p> <p>Know how to use construction kits (eg Duplo, mobilo) to assemble vehicles with moving wheels.</p>	<p>Know about the simple working characteristics of materials and components.</p> <p>Know about the movement of simple mechanisms such as levers, sliders, wheels and axles.</p> <p>Know how freestanding structures can be made stronger, stiffer and more stable.</p> <p>Know that a 3-D textiles product can be assembled from two identical fabric shapes.</p> <p>Know that food ingredients should be combined according to their sensory characteristics.</p> <p>Know the correct technical vocabulary for the projects they are undertaking</p>	<p>Know how to use learning from science and mathematics to help design and make products that work.</p> <p>Know that materials have both functional properties and aesthetic qualities.</p> <p>Know the correct technical vocabulary for the projects they are undertaking.</p> <p>Know how mechanical systems such as levers and linkages or pneumatic systems create movement.</p> <p>Know how simple electrical circuits and components can be used to create functional products.</p> <p>Know how to program a computer to control their products.</p> <p>Know how to make strong, stiff shell structures.</p> <p>Know that a single fabric shape can be used to make a 3D textiles product.</p> <p>Know that food ingredients can be fresh, pre-cooked and processed.</p>	<p>Know that materials can be combined and mixed to create more useful characteristics.</p> <p>Know that mechanical and electrical systems have an input, process and output.</p> <p>Know the correct technical vocabulary for the projects they are undertaking.</p> <p>Know how mechanical systems such as cams or pulleys or gears create movement.</p> <p>Know how more complex electrical circuits and components can be used to create functional products.</p> <p>Know how to program a computer to monitor changes in the environment and control their products.</p> <p>Know how to reinforce and strengthen a 3D framework.</p> <p>Know that a 3D textiles product can be made from a combination of fabric shapes.</p> <p>Know that a recipe can be adapted by adding or substituting one or more ingredients.</p>

**Progression by Area: COOKING AND NUTRITION**

EYFS	Year 1/2	Year 3/4	Year 5/6
<p>Take part in sensory activities with fruit and vegetables, ie involving appearance, taste and smell.</p> <p>Cut soft fruit and vegetables using appropriate utensils.</p>	<p>Know that all food comes from plants or animals.</p> <p>Know that food has to be farmed, grown elsewhere (e.g. home) or caught.</p> <p>Know how to name and sort foods into the five groups in the Eatwell Guide.</p> <p>Know that everyone should eat at least five portions of fruit and vegetables every day.</p> <p>Know how to prepare simple dishes safely and hygienically, without using a heat source.</p> <p>Know how to use techniques such as cutting, peeling and grating.</p>	<p>Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.</p> <p>Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source.</p> <p>Know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the Eatwell Guide.</p> <p>Know that to be active and healthy, food and drink are needed to provide energy for the body.</p>	<p>Know that a recipe can be adapted a by adding or substituting one or more ingredients.</p> <p>Know that seasons may affect the food available.</p> <p>Know how food is processed into ingredients that can be eaten or used in cooking.</p> <p>Know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p> <p>Know that recipes can be adapted to change the appearance, taste, texture and aroma.</p> <p>Know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.</p>

## Lesson Design in DT

The Charmouth Primary long term programme and progression plan for DT is based on the Design and Technology Association's Projects on a Page. It is up to class teachers to assess on an individual or school basis if the resources or tasks might best be adapted to suit the needs of specific classes, and they are encouraged to discuss this with the DT subject leader to ensure the integrity of the progression plan is not affected.

In planning sequences of learning, teachers use the 3S definition: designing and making Something for Somebody for Some purpose. Alongside this, our DT curriculum follows the following principles:

**USER:** Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or a specific target group.

**PURPOSE:** Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.

**FUNCTIONALITY:** Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes. In D&T, it is insufficient for children to design and make products which are purely aesthetic.

**DESIGN DECISIONS:** Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and use learning from other subjects. When making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.

**INNOVATION:** When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open-ended starting points for learning.

**AUTHENTICITY:** Pupils should design and make products that are believable, real and meaningful to themselves and others.

Across a sequence of learning, children complete a mixture of Investigative and Evaluative Activities (IEAs), Focused Tasks and a Design, Make and Evaluative Assignment. These support children to build knowledge and skills in line with the principles above.



**DT for learners with SEND**

**Inclusion in DT means:** everyone feeling they can be successful, opportunities to explore their creativity from their own starting points, supporting language and communication for all learners.

<b>Possible struggle or challenge</b>	<b>Scaffold or support to consider</b>
<ul style="list-style-type: none"><li>- Difficulties with language/ vocabulary</li></ul>	<ul style="list-style-type: none"><li>- Clarify technical terms that have different meanings in other contexts, for example 'knead'/'need', 'grain', 'glaze', 'form', 'saw', 'seam', etc. Labels placed around the room, lists of key words, posters, etc can help pupils to recognise and spell the names of important pieces of equipment. Flow diagrams of key processes, time plans or design prompts with graphics may also be helpful.</li><li>- Prepare visual prompts, using images, photos or symbols, showing the order to carry out a sequence of activities for a particular process. Checklists allow pupils to see what they have completed, what to do next and where to finish.</li><li>- Some pupils will need to use nonvisual means to evaluate different products, to use this information to generate ideas and to become familiar with tools and other equipment. This may require extra time.</li></ul>
<ul style="list-style-type: none"><li>- Difficulties with motor skills</li></ul>	<ul style="list-style-type: none"><li>- For some pupils, supervision and help from an adult and/or buddy in the making stages is invaluable for them to learn and practise skills safely.</li><li>- However, additional adults should promote pupils' independence by giving guidance and asking questions that enable pupils to: " think for themselves – pupils should not always be following a designing and making process step by step, with the teacher/ additional adult doing most of the thinking, and " perform tasks for themselves – be aware of the fine line between intervention and taking over a pupil's project.</li><li>- Additional adults should be clear about: the order and importance of processes in a task; the skills and knowledge they must promote;</li></ul>

	and the health and safety rules, eg basic food hygiene.
- Difficulties with engagement, resilience and self-esteem	<ul style="list-style-type: none"> <li>- Design and make assignments often give pupils opportunities to work as individuals or in a team, learning from the work of others. For some pupils, developing ideas with others can be challenging. Pairings and groupings need to be sensitive to this.</li> <li>- If writing is a trigger for children, pupils could contribute to product evaluation, where appropriate, using simple choice cards with words and/or symbols, eg for like/dislike, simple ranking or recording sheets.</li> <li>- Consider whether pupils, particularly those with SEMH needs, could judge their own work against the design specification rather than against the work of other pupils.</li> <li>- When pupils destroy work or struggle when they make mistakes, highlight the developing ideas and mistakes of professional designers and others. Show how mistakes can be corrected, to remove pupils' fear of making mistakes.</li> </ul>
- Processing difficulties	<ul style="list-style-type: none"> <li>- Using digital cameras to record each stage of designing and making, then sequencing the photos, can be a useful tool to aid pupils' memory of the stages of completing the work.</li> <li>- Display step-by-step reminders of key processes. Regularly repeat and reinforce previously learnt skills and processes.</li> <li>- Break down the designing and making stages into small manageable steps, and incorporate designing into 'mini making' tasks with specific targets. Use a tick list or wallchart so that pupils are clear about what they are working towards and how far they have got in relation to completing the project.</li> </ul>

Our approach to assessing DT is based on the essential knowledge, understanding and skills that all pupils should learn in order to progress through the curriculum.

Using the National Curriculum programme of study and the school progression framework, teachers consider broadly what the pupil actually knows, understands and can do. At the end of a sequence of lessons, teachers will identify on the medium term plan review aspects of the curriculum where more than 20% of the class struggled to grasp an expected objective. This will then be used to support teaching and planning for pupils, for example, within a following sequence of work or through revisiting associated knowledge in science or mathematics.

Teachers will also identify, on the basis of the Design, Make and Evaluate Assignment, any individuals who have fallen significantly behind expectations or who have displayed exceptional performance. For individuals who have shown particular struggle, support may be provided through enhanced provision or support within future sequences, or through opportunities with the teacher to revisit/conference key knowledge or skills not yet secured. For those who have shown exceptional performance, further opportunities may be provided in future sequences, for example, acting as a demonstrator or partner/coach to others, deepening thinking challenges throughout the process.