



_Design & Technology Class Curriculum Plan Whole School 2021-2022

Intent

At Castle View Primary School, we believe Design and Technology (DT) is essential to prepare children to participate in tomorrow's rapidly changing world. Teachers encourage children to develop the skills of investigating, designing, making and evaluating. DT encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. Using their creativity and imagination, children design, make and evaluate and improve products that solve real life problems. Studying DT enables children to develop a combination of practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practises. This allows children to reflect on and evaluate present and past design and technology, its uses and impacts. They learn to develop a respect for the environment, their own health and the safety of others. They acquire a wide range of subject knowledge and draw on cross-curricular links such as Science, Computing, Maths and Art. Children learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens.

EYFS

In Early Years, we follow the children's interest and therefore do not have set topics. We endeavour to make learning active, hands on and most importantly fun.

DT- (Physical Development and Expressive Arts and Design)

Technical Knowledge

Cooking and Nutrition- (Physical Development)

- To be able to name and sort healthy and unhealthy foods.
- To understand the need for a variety of foods in a diet.
- To know what a recipe is.
- To understand the importance of hand washing.

Textiles- (Physical Development/ Expressive Arts)

- To know how to join two pieces of materials e.g. gluing.
- To know how to colour fabrics using paint and pens.
- To be able to decorate fabrics using beads and buttons.

Mechanisms- (Physical Development/ Expressive Arts)

- To know how to manipulate paper in different ways by curling, bending and tearing.
- To name basic construction tools e.g. glue, tape, scissors.

Structures- (Physical Development/ Expressive Arts)

- To know how to make a free-standing structure from blocks/ boxes.

DT- (Physical Development. Expressive Arts and Design and Communication and Language)

Skills

Design

- To talk about what they are going to make and what materials they might use.
- To mark make and discuss their design drawings.

Make

- To use simple tools safely and correctly e.g. scissors, hole punch.
- To mix ingredients using tools safely and correctly e.g. spoons.
- To wash hands their correctly.
- To join, assemble and combine materials using temporary methods e.g. gluing and taping.

Evaluate-



	<ul style="list-style-type: none"> To know how to make a structure taller. 	<ul style="list-style-type: none"> To talk about their design ideas and what they have made. To identify what they like about their product.
	<p>Key vocabulary <u>Cooking and Nutrition:</u> fruit, vegetables, healthy, unhealthy, taste, smell, texture, appearance, safety, hygiene, hand washing, apron, health, recipe <u>Textiles:</u> join, bead, button, materials, fabric, felt, colour, decorate <u>Structures:</u> cello tape, glue stick, masking tape, structure, stronger, parts, triangle <u>Mechanisms:</u> curling, bending, tearing, joining, hammer, glue, tape, staples, scissors, mechanism, move</p>	
	<p>Sticky Knowledge:</p> <ul style="list-style-type: none"> Healthy foods are good for your health. To many unhealthy foods are bad for your health. Washing your hands helps to remove germs. A structure is something of many parts that is put together. 	
<p>Character Values</p>	<p>Playing and exploring (Resilience): I can seek challenges. Active learning (Responsibility): I can persist with an activity when challenges occur. Creating and Thinking Critically (Expression): I can have my own ideas. I can test my ideas. I can make predictions.</p>	
<p>Year 1 Retrieval</p>	<ul style="list-style-type: none"> An understanding of the importance of handwashing before cooking to remove germs Able to use tools correctly and safely e.g. scissors, spoons Understanding of healthy and unhealthy foods Understanding of eating well contributing to good health. Able to combine materials using glue and tape. 	
<p>Year 1</p>	<p>Technical Knowledge</p> <p><u>Cooking and Nutrition – Preparing Fruits and Vegetables</u></p> <ul style="list-style-type: none"> To understand where food comes from e.g. farm, grown. To understand the need for a variety of foods in the diet. To know and use sensory vocabulary relevant to the project. To understand the importance of hand washing and wearing an apron when preparing food. To know how to follow a recipe. <p><u>Structures- Freestanding</u></p> <ul style="list-style-type: none"> To know the simple order of making a structure. 	<p>Skills- Research, Design, Make and Evaluate (all these skills to be incorporated into each 'Technical Knowledge' unit)</p> <p><u>Research</u></p> <ul style="list-style-type: none"> To explore some existing products- Who is it for? What is the product used for? Where might you find the product? <p><u>Design</u></p> <ul style="list-style-type: none"> To suggest ideas and explain what product they will be designing and making to others. To identify a target group for who they intend to design and make their product for. To model their ideas on paper and card creating simple designs.



	<ul style="list-style-type: none"> To understand how to make a free standing structures stronger, stiffer and more stable. To know some simple finishing techniques to complete their structure. To know the names of some simple 3D shapes seen within their structures. <p><u>Mechanisms- Sliders and Levers</u></p> <ul style="list-style-type: none"> To understand what levers and sliders do e.g. they can move things. To understand that different mechanisms create different types of movement. To know different fixing techniques e.g. masking tape. 	<p><u>Make</u></p> <ul style="list-style-type: none"> To select from and use simple utensils, tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing. To use a range of tools to cut, join and combine materials safely and correctly e.g. scissors. To use techniques such as cutting, chopping and peeling to prepare fruits and vegetables. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> To talk about their design ideas and what they have made. To identify strengths and weaknesses in relation to its intended purpose.
<p><u>Key Vocabulary:</u> <u>Cooking and Nutrition:</u> fruit, vegetables, healthy diet, plants, animals, safety, food hygiene, procedures, balanced diet, preparing, handling, cooking <u>Structures:</u> free-standing, cut, fold, join, fix, weak, strong, glue gun, glue, tape, stronger, stiffer, stable, finishing techniques, template <u>Mechanisms:</u> mechanism, lever, slider, slot, pivot, guide/bridge, masking tape, fastener, movement, fixing techniques</p>		
<p><u>Sticky Knowledge:</u></p> <ul style="list-style-type: none"> Eating a variety of different foods keeps us healthy Food comes from plants or animals A free-standing structure is not attached to another structure Making a base wider can make structures stiffer, stronger and more stable Levers and sliders make things move 		
<p>Character Values</p>	<p>Resilience- I can try new foods when preparing fruits and vegetables. Expression- I can articulate what I felt went well and how it could be improved. Expression- I can be creative when designing and creating structures.</p>	
<p>Year 2 Retrieval</p>	<ul style="list-style-type: none"> An awareness of where food comes from To understand the importance of hand washing when cooking To be able to create a range of structures To understand what levers and sliders do 	
<p>Year 2</p>	<p><u>Technical Knowledge</u> Cooking and Nutrition- Preparing Fruits and Vegetables</p>	<p><u>Skills- Research, Design, Make and Evaluate (all these skills to be incorporated into each 'Technical Knowledge' unit)</u></p>



- To know the five food groups from the eat-well plate.
- To understand the principles of a balanced diet.
- To understand that foods have to be farmed, reared or caught.
- To know and follow some safety and food hygiene procedures e.g. regular handwashing, wearing an apron, tying hair up.

Textiles- Templates and Joining

- To know what a template is and use one to cut out shapes.
- To learn how to join items using a simple stitch such as a running stitch.
- To know a range of finishing techniques e.g. decoration by gluing or stitching.
- To know a range of fastenings such as buttons and velcro.

Mechanisms- Wheels and Axles

- To know and understand what wheels, axles and axles holders are.
- To know the difference between fixed and free moving axles.
- To know how to fix wheels and axels to a product.

Research

- To explore some existing products- Which materials are used? How do the products work? Who made the product.
- To express opinions about the different products they have researched
- To research famous inventors and designers.

Design

- To develop their design ideas through discussion, observation, drawing and modelling with others.
- To identify a simple design criterion.
- To identify a clear purpose for what and who they intend to design and make.
- To draw simple sketches with notes to support their explanations and record their ideas.

Make

- To choose appropriate tools, equipment, techniques and materials from a wide range using the correct vocabulary to name them.
- To safely measure, mark out, cut and shape materials and components using a range of tools showing some accuracy.
- To use simple tools to prepare ingredients e.g. chopping, cutting, peeling and grating.
- To measure and weight ingredients using non- statutory measures.

Evaluate

- To discuss closely how their product meets their design criteria.
- To discuss how their product could be improved.

Key Vocabulary:

Cooking and Nutrition: food groups, eat-well plate, fruit, vegetables, farmed, reared, caught, safety, hygiene, bread and cereals, meat and fish, milk and diary, fats and sugars and fruits and vegetables, germs

Textiles: template, mould, joining, running stitch, finishing technique, decoration, fabrics, constructed, fastenings

Mechanisms: Wheel, axel, fixed, free, design, make, cutting, joining, product, axel holder, rode, rotate



	<p><u>Sticky Knowledge:</u></p> <ul style="list-style-type: none"> • The 5 food groups are bread and cereals, meat and fish, milk and dairy, fats and sugars and fruits and vegetables. • Foods have to be farmed, reared and caught to be eaten. • A template is a mould used as a guide to make something. • An axel holder is the part where an axle fits and rotates • An axel is a rod that enables a wheel to rotate 	
<p>Character Values</p>	<p>Resilience- I can remain calm when faced with a challenge when using unfamiliar resources. Expression- I can articulate how my product can be improved to my peers and teachers. Chivalry- I can support my peers when they face challenges. I can offer advice to my peers when the face challenges.</p>	
<p>Year 3/4 Retrieval</p>	<ul style="list-style-type: none"> • Knowledge of the Eat well plate • Understanding of what forms a balanced diet • Understanding of where food comes from (beyond the shop) • Ability to join items using a simple stitch • Understanding of axles and wheels in products they have made 	
<p>Year 3/4</p>	<p><u>Technical Knowledge</u></p> <p><u>Cooking and Nutrition- Healthy and Varied Diet</u></p> <ul style="list-style-type: none"> • To understand what nutritional benefits different food types give us. • To understand that all foods must be farmed, grown or caught and that food comes from the UK and across the world. • To know where to find the nutritional information on packaging. • To know safety and food hygiene procedures and follow them confidently. <p><u>Structures- Shell Structures</u></p> <ul style="list-style-type: none"> • To explore and name more sophisticated methods for stiffening and strengthening structures. • To know how to create a shape net. • To know how to test a materials strength. • To know how to use CAD (computer aided design) to develop a product. <p><u>Mechanisms- Levers and Linkages</u></p> <ul style="list-style-type: none"> • To know and understand how to use lever and linkages mechanisms. 	<p><u>Skills- Research, Design, Make and Evaluate (all these skills to be incorporated into each 'Technical Knowledge' unit)</u></p> <p><u>Research</u></p> <ul style="list-style-type: none"> • To explore some existing products- When was the product made? Where was the product designed and made? What methods of construction have been used? • To evaluate the product on its design, material and its use. • To research famous inventors and designers. <p><u>Design</u></p> <ul style="list-style-type: none"> • To identify a purpose and establish a design criteria for a product. • To develop ideas by producing cross- sectional drawings and diagrams. • To develop more than one design or adaptation of the initial design. • To generate realistic ideas that meet the needs of the user/s. <p><u>Make</u></p>



- To know the difference between a fixed and loose pivot.
- To know and create guides to control movement.
- To know the difference between the input and output in a mechanism.

- To safely measure, mark out, cut, assemble and join with some accuracy.
- To make sensible choices from a wider range of tools and unfamiliar materials and plan out the main stages of using them.
- To use a range of techniques to join and combine ingredients e.g. slicing and mixing.
- To measure and weight ingredients using scales with support.
- To cook using a heat source e.g. oven with supervision.

Evaluate

- To evaluate their product against their original design criteria whilst designing and making.
- To use their design criteria to evaluate their product; identify strengths and areas for development.
- To consider the views of the user whilst evaluating.

Key Vocabulary:

Cooking and Nutrition: nutrition, food types, farmed, grown, caught, UK, world, nutritional information, packaging, safety, food hygiene, carbohydrates, proteins, fruits and vegetables dairy, oils and spreads

Structures: Shell, structure, net, stiffening, strengthening, strength, computer aided design, environmental issues, wastage

Mechanisms: levers, linkage, fixed, loose, guide, movement, mechanism, input, output

Sticky Knowledge:

- Farmed foods are grown on farms, allotments, gardens or windowsills.
- Some animals such as chickens are reared for food.
- Some animals such as fish are caught for food.
- The flat or opened-out shape of an object, such as a box is called a net.
- A fixed pivot attaches a lever to a base.
- A loose pivot attaches two levers together.

Character Values

Responsibility- I can take pride in the appearance and presentation of my work.

Chivalry- I can consider the views of the user and others whilst evaluating.

Resilience- I can stick to a task and complete a project successfully.

Year 4/5 Retrieval

- Understanding of the nutritional benefits food gives us
- Understanding that foods of where food comes from and is farmed, grown or caught
- Ability to use a range of tools competently
- Ability to cook using a heat source with supervision



Year 4 /5

Technical Knowledge

Cooking and Nutrition- Healthy and Varied Diet

- To understand and name different foods and drinks that provide different substances the body needs to be healthy and active.
- To understand seasonality and the advantages of eating seasonal and locally produced food.
- To know which foods are grown in different countries and continents.
- To know that recipes can be adapted to change the appearance, taste, texture and aroma of foods.
- To know and follow a range of safety and food hygiene procedures.

Textiles- Combining different fabric shapes

- To know how to securely join fabrics using sewing through cross stitching or over sewing.
- To know how to use fasteners appropriate to the product e.g. zip for a bag.
- To know how to use stitches to decorate products e.g. stem stitch, satin stitch, chain stitch, lazy daisy stitch.
- To investigate using materials other than fabrics e.g. for handles plastic bags cut into strips.
- To know what seam allowances are.

Electrical Systems (KS2)- Simple Switches and Circuits *to be covered around the same time or soon after it is covered in Science

- To know what an electrical circuit is.
- To know what a bulb, buzzer and switch is and their functions.
- To construct a simple series circuit to generate static electricity.
- To know how to make simple secure connections.
- To know different switch types e.g. push to break, push to make, reed and toggle switch.



Skills- Research, Design, Make and Evaluate (all these skills to be incorporated into each 'Technical Knowledge' unit)

Research

- To explore some existing products- How well does the product achieve its purpose? how environmentally friendly is the product? How environmentally friendly are the resources?
- To evaluate the product on design and use and appearance.
- To research and find out about famous inventors and designers.

Design

- To develop their own design criteria.
- To use their market research to inform the design of their product.
- To identify design features that will appeal to the intended users.
- To record the plan using exploded designs and simple computer programs.

Make

- To use techniques which require more accuracy to cut, shape, join and finish their work e.g. cutting internal shapes and slots in frameworks.
- To read and follow a recipe which involves several processes.
- To use cooking techniques such as slicing, mixing, spreading and baking.
- To join and combine ingredients by kneading.
- To measure and weight a range of ingredients using scales competently.
- To cook using a heat source with some supervision setting the temperature.

Evaluate

- To evaluate their work both during and at the end of the process.
- To carry out appropriate tests before making any improvements.



		<ul style="list-style-type: none"> • To evaluate their product against the original design specification on how well it meets the needs of the user. • To evaluate it personally discussing what does and does not work and to seek evaluation from others.
	<p>Key Vocabulary: <u>Cooking and Nutrition:</u> substances, healthy, active, seasonality, local, countries, continents, recipe, appearance, taste, texture, aroma, hygiene <u>Textiles:</u> securely, cross stitching, over sewing, fasteners, decorate, stem stitch, satin stitch, chain stitch, lazy daisy stitch, fabrics, seam allowance <u>Electrical Systems:</u> electrical circuit, bulb, buzzer, switch, electricity, connections, switch types, push to break, push to make, reed and toggle switch</p>	
	<p>Sticky Knowledge:</p> <ul style="list-style-type: none"> • Seasonality is when food is used at its harvest time. • Cross-stitch and over sewing are stitches used to join fabrics. • A seam allowance is the area that stops the stitches from pulling apart. • An electrical circuit is a path which electricity passes. • A complete circuit is needed for electricity to flow and devices to work. • A bulb is a component that lights up when electricity flows through it and a switch is a component that opens and closes the electrical circuit. 	
<p>Character Values</p>	<p>Responsibility- I can take pride in the appearance and presentation of my work. Expression- I can use computer programs to plan my designs and be creative with this. Chivalry- To seek evaluation throughout their research, design and make processes.</p>	
<p>Year 5/6 Retrieval</p>	<ul style="list-style-type: none"> • An understanding of seasonality • An understanding of where certain foods are grown • An awareness of an electrical circuit and constructing one • An awareness of electrical components and their functions 	
<p>Year 5/6</p>	<p>Technical Knowledge</p> <p><u>Cooking and Nutrition- Celebrating Culture and Seasonality</u></p> <ul style="list-style-type: none"> • To understand where food comes from, describing the process of 'farm to fork' for a given ingredient. • To understand the environmental impact on future product and cost of production. • To know that a recipe can be adapted by adding or substituting one or more ingredients. • To know and name safety and food hygiene procedures and follow these strictly. 	<p>Skills- Research, Design, Make and Evaluate (all these skills to be incorporated into each 'Technical Knowledge' unit)</p> <p><u>Research</u></p> <ul style="list-style-type: none"> • To explore some existing products- does the product have any other purpose? How environmentally friendly is the product? How environmentally friendly are the resources? • To research how much it costs to make the product, to sell the product and what the profit margin would be. <p><u>Plan</u></p>



Mechanisms- Pulleys and Gears

- To know and understand what a gear and pulley is.
- To know that gears and pulleys can be used to speed up, slow down or change the direction of movement.
- To understand the ratio in a gear or pulley system (how often larger wheels turn in relation to small pulleys or the number of teeth in gears).
- To be able to identify gear and pulley mechanisms in everyday objects.

Structures- Frame Structures

- To know how to stiffen, strengthen and reinforce 3D frameworks.
- To know which materials are best suited to stiffen and reinforce by selecting them due to their properties.
- To know which shapes are the strongest and will support the most weight in a structure.
- To know and understand the term triangulation.
- To know to perform simple tests to test the functionality and strength of products.

Electrical Systems (KS2)- Complex Switches and Circuits *covered around the same time or soon after it is covered in Science

- To know how to construct a simple series circuit confidently (building on Y4/5).4
- To incorporate simple self-made switches into a circuit.
- To know how to test components and assess faults in a series circuit.
- To know that mechanical and electrical systems have an input, process and output.
- To understand that the number and voltage of cells in a circuit can affect the components such as brightness of a lamp or volume of a buzzer.
- To understand how to stay safe when working with electricity.

- To use research into famous designers and inventors and to use market research to inform the design of their product.
- To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and computer-aided design (CAD).
- To use found information (researched) to inform decisions – e.g. time, resources, costs.

Make

- To apply knowledge of materials and techniques to refine and rework their product to improve its functional properties and aesthetic qualities.
- To use tools to make careful measurements, so that joints, holes and openings are accurate e.g. bradawl and hand-drill use.
- To use technical knowledge and accurate skills to problem solve during the making process e.g. when they face a problem.
- To use advanced methods for mixing ingredients e.g. rubbing in.
- To measure and weight ingredients using different scales.
- To cook using a heat source e.g. oven with some supervision using the basic functions independently- setting timers, changing temperatures.
- To use a range of cooking techniques e.g. chopping, peeling, grating, slicing, mixing, spreading, kneading and baking.

Evaluate

- To carry out appropriate tests on the product to test its effectiveness.
- To evaluate against original criteria- does it have and is it fit for purpose?
- To self-evaluate discussing what does and does not work and to seek evaluation from others.
- To evaluate the quality of the product.



	<p>Key Vocabulary: <u>Cooking and Nutrition:</u> farm to fork, reared, processed, production, distribution, ingredient, environmental impact, cost, adapted, substituting, sterilisation, over-fishing, non-sustainable farming <u>Mechanisms:</u> pulley, gear, ratio, teeth, mechanisms <u>Electrical systems:</u> simple series circuit, self-made switches, components, test, faults, input, process, output, current, force <u>Structures:</u> frame structures, stiffen, strengthen, reinforce, triangulation, functionality, timing, resources, costs, constraints</p> <p>Sticky Knowledge:</p> <ul style="list-style-type: none"> • Farm to fork is the process of production, processing, distribution and consumption of food. • Lights and buzzers are output devices. • Battery's and switches are input devices. • Safety with electronics is very important as electricity can kill. • A gear is a wheel with teeth around its circumference. • A pulley is a grooved wheel over which a drive belt can run. • Mechanisms need a force to make them move.
<p>Character Values</p>	<p>Responsibility- I can take pride in the appearance and presentation of my work. Resilience- I can work independently, with confidence and generate my own ideas and fascinations. Expression- I can articulate my thoughts and ideas confidently and ask questions which will impact my projects.</p>

Sequence

EYFS- Food, Textiles, Mechanisms, Structures

Year 1- Food, Structures, Mechanisms

Year 2- Food, Textiles, Mechanisms

Year 3/4- Food, Structures, Mechanisms,

Year 4/5- Food, Textiles, Electrical Systems

Year 5/6- Food, Mechanisms, Structures, Electrical Systems