



  
EQUALS TRUST  




# DT Curriculum v2

## DT Curriculum Statement



### Intent - What do we want for our children as Design Technologists?

At Crossdale, we aim to prepare children for participation in tomorrow's rapidly changing technologies. Design and technology at Crossdale will provide children with the tools to deal with problems they meet in everyday life. We meet the requirements of the National Curriculum in Design and Technology by providing a balanced programme where children have experiences involving **structures, mechanisms, food technology and textiles**.

Design Technology spans the curriculum, often supporting and enriching understanding in other subjects, by **applying specific design and making knowledge and skills to solve real and relevant practical problems**. Design and Technology requires pupils to identify needs, generate design ideas, plan, make, and evaluate. Through well planned tasks, which allow for creativity, pupils learn how to take risks and become resourceful, innovative, enterprising, and capable citizens.

At Crossdale, we aim to:

- Provide a relevant & challenging enjoyable D&T curriculum.
- Develop creative thinking.
- Understand and apply the principles of nutrition and learn how to cook.
- Provide opportunities for co-operative working.
- Give children opportunities to work independently and develop their organisational and presentation skills.
- Teach children how to use various tools appropriately.
- Use a practical, problem-solving approach to tasks so that the children will develop a range of skills around the design process (investigate, design, model, refine, make, test, and evaluate).

### Implementation - How will we carry out our vision?

We implement our vision by looking through our 'designer lens'. As designers, children will be taught to communicate using the language and terminology of design technology and to develop and refine their **evaluating, designing, and making** skills using their knowledge and understanding of a range of skills, tools, and techniques through four main design themes: **mechanisms, structures, textiles, and food**.

#### Mechanisms

- Pupils learn how mechanical systems such as cams, pulleys or gears **create movement** and use these mechanisms in their own designs.
- Pupils learn that mechanical and electrical systems have an input process and an output and can programme a computer to control their product.

#### Structures

- Pupils explore building structures from construction materials and move on to create their own shell or framed structures.
- **Design and make** structures in three dimensions thinking about strength, stability, and stiffness using paper, card, wood and metal and making more complex forms as they progress through school.

#### Textiles

- Pupils know that **materials can be combined** to make more useful characteristics.
- **Design and make** products that are functional and/or are aesthetically pleasing.
- **Create 3D products** from a combination of fabric shapes using a variety of joining techniques.

## Food

- Cook and apply the principles of **nutrition and healthy eating**.
- Learn, apply and understand the importance of **hygiene** whilst cooking.
- Pupils understand the importance of the being able to cook and how it is intrinsic to feed themselves and others affordably and well, now and in later life.
- Instil a love of cooking.

## Planning:

- All planning should identify the **resources needed** as well as **skills, knowledge, and vocabulary** clearly and lesson planning is supported by the use of the **Equals Trust DT unit plans** and year group progression and skills documents.
- A clear sequence is used throughout all units; research, practical tasks, design, make, evaluate.
- Teachers set high expectations for all pupils. They use appropriate assessment to set ambitious target, remove barriers and plan challenging work for all groups of learners - including more able pupils, pupils with low prior attainment, pupils from disadvantaged backgrounds, pupils with SEND and pupils with EAL.

Further information can be found in our statement of equality information and objectives, and in our SEND policy and information report.

Teachers, please note...

- All planning or resources used to support planning should be uploaded onto All Staff at the start of every half term.
- Design and Technology may often complement taught driver topics (where meaningful links have been made) but teaching must be driven by Design and Technology skills and knowledge.

## Impact - How will we assess what the children know, remember, and understand?

Teachers will monitor the impact of their teaching using:

- AFL during lessons
- Planned opportunities for teacher, peer and self- evaluation discussion of products
- Planned opportunities to amend and improve work
- Display: pupils' artwork should be displayed

The Subject Leaders monitor the way their subject is taught throughout the school by looking at the intent, implementation and impact using:

- Planning & display scrutiny to evaluate the impact of what skills and knowledge have been taught and remembered?
- Pupil Interviews/Learning Walks; assess impact of teaching, what is known & remembered - using designs and final products as prompts.
- Planning and delivering CPD

The Subject Leaders also have responsibility for resources, storage & management. All the monitoring information is used by the Subject Leaders to ensure our provision and pupil outcomes are the very best they can be. Any next steps to move the subject and the children's learning forward are fed into the Subject Leader's monitoring and action plans, which form part of the whole school improvement plan.

Governors monitor whether the school is complying with its funding agreement and teaching a "broad and balanced curriculum" which includes the required subjects, through:

- Governor monitoring visits, the Head Teacher reports & the School Development Plan

# Elements of our DT Curriculum

## Knowledge and Understanding

*(Factual)*

Designers and engineers develop a knowledge and understanding that enables them to evaluate, design and make. Knowledge and understanding of a range of making skills, tools and techniques enable them to generate ideas for how to create their intended outcome

Technical DT Knowledge (The what, when, how of DT)	Specific Vocabulary (The language and terminology of DT)
<u>Key Strands of this:</u> <ul style="list-style-type: none"> <li>- Textiles</li> <li>- Mechanism</li> <li>- Designers</li> <li>- Structure</li> <li>- Food</li> </ul>	<u>Key Strands of this:</u> <ul style="list-style-type: none"> <li>- Design Process</li> <li>- Structures</li> <li>- Food</li> <li>- Mechanisms</li> <li>- Textiles</li> </ul>



















## Strands/Themes

Mechanisms	Structures	Textiles	Food
<b>Designing</b> Understanding users and purpose Ideas			
<b>Making</b> Planning Practical skills and techniques			
<b>Evaluating</b> Investigating existing products Own ideas and products			



These elements do not stand as isolated parts; thinking and work is often a combination of all or a number of them.

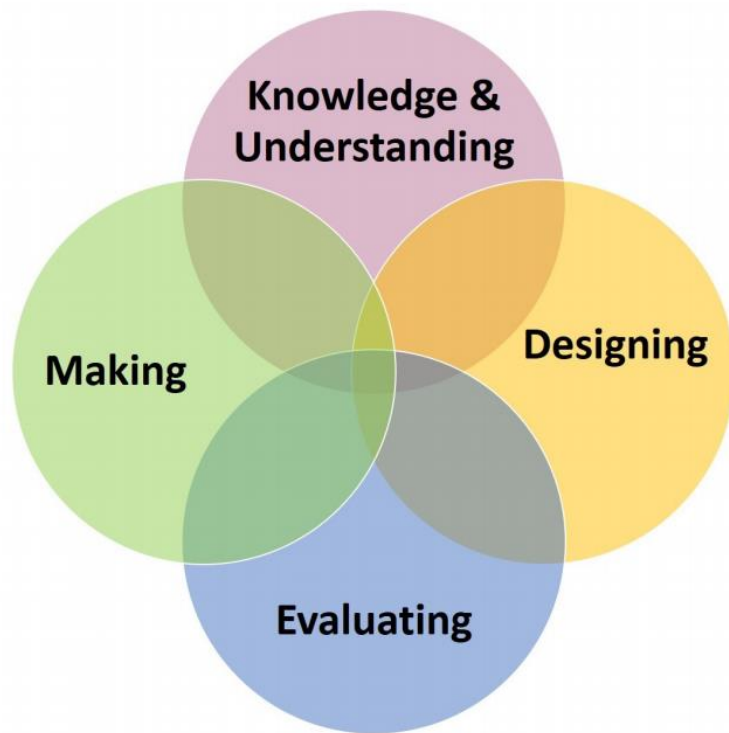
# DT Overview

	Autumn Term		Spring Term		Summer Term	
Year 1 & 2 Cycle A	The Battle of Hasting				London; my capital city	
	 Flags & Banners				 Moving Pictures	
Year 1 & 2 Cycle B	Wonderful Me	The Great Fire of London		An Island Home: Plants	Seaside Holidays	
	 Fruit Kebabs	 Tudor Houses		 Puppets	 Suitcases	
Year 3	Our Healthy Bodies		The Greeks			Rocks and Rumbles
	 Coleslaw & sandwiches		 Moving mascot			 Archaeologist's drawstring bag
Year 4		Mountains		Rivers	The Dark Ages?	
		 Making biscuits and a container		 Circuits & switches	 Weaving	
Year 5	Coal Mining		Solar System	Egyptians		From farm to fork
	 Coal Miner's Bag		 Solar System	 Playground shelter		 Soup making
Year 6				Great Explorers		Identity
				 Bread Buns		 Fairground Ride

# Enquiry Questions





	Autumn Term		Spring Term		Summer Term	
Year 1 & 2 Cycle A	The Battle of Hastings				London; my capital city	
	<i>How can we use different materials to make a flag or banner?</i>				<i>How can we make a moving picture using sliders or levers?</i>	
Year 1 & 2 Cycle B	Wonderful Me	The Great Fire of London		An Island Home: Plants	Oh, I do like to be beside the Seaside	
	<i>How can we chop, peel or grate fruit to prepare a fruit kebab safely and hygienically?</i>	<i>How can we make a row of Tudor houses that has a strong and stable structure?</i>		<i>How can we join fabric together to make a 3D puppet?</i>	<i>How can we design &amp; make a suitcase move using wheels &amp; axels?</i>	
Year 3	Our Healthy Bodies		The Greeks			Rocks and rumbles
	<i>How can we chop, peel, grate, spread or mix ingredients to prepare a sandwich and coleslaw safely and hygienically?</i>		<i>How can we use a pneumatic system to make a character move?</i>			<i>How can we make a fabric bag that is useful and looks good?</i>
Year 4		Mountains		Rivers	The Dark Ages?	
		<i>How can we use a strong, stiff shell structure as packaging to protect biscuits?</i>		<i>How can we make a torch with an on and off switch?</i>	<i>How did Vikings weave to combine materials to make clothes?</i>	
Year 5	Coal Mining		Solar System	Egyptians		From farm to fork
	<i>How can we design &amp; make a fabric bag that is useful, looks good &amp; fastens?</i>		<i>How can we use cams to make a model of the solar system?</i>	<i>How can we use triangulation to make a strong and sturdy playground shelter?</i>		<i>How can we chop, peel, grate or slice ingredients and adapt recipes to prepare a soup safely and hygienically?</i>
Year 6				Great Explorers		Identity
				<i>How can we use a range of techniques to prepare and adapt a recipe to make a bread based bun?</i>		<i>How can we use an electric motor to design &amp; make a rotating fairground model?</i>





These elements do not stand as isolated parts; thinking and work is often a combination of all or a number of them.

### Key to strand topics

<b>Mechanisms</b>	
<b>Structures</b>	
<b>Textiles</b>	
<b>Food</b>	

		EYFS	Year 1 & 2		Year 3	Year 4	Year 5	Year 6
Topics	Mechanisms		Sliders and Levers- make a moving picture (London)	Wheels and Axels- suitcases (Seaside holidays)	Moving Mascot (Pneumatics) (The Greeks)	Circuits & Switches (Rivers)	Solar System model (Cams) (The Solar System)	Fairground ride with electrical links/coding (Identity)
	Structures		Freestanding - Tudor Houses (The Great Fire)			Making a biscuit container (Mountains)	Playground Shelters (The Egyptians)	
	Textiles		Puppets (An Island Home: Plants)	Flags & Banners (The Battle of Hasting)	Archaeologist’s drawstring bag (Rocks and rumbles)	Weaving (The Dark Ages?)	Coal Miners Bag (Coal Mining)	
	Food		Fruit Kebabs (Wonderful Me)		Sandwiches & Coleslaw (Our Healthy Bodies)	Biscuits (Mountains)	Soup Making (From Farm to fork)	Bread Buns (Great Explorers)
Designing	Understand users and purposes	<ul style="list-style-type: none"><li>say who they are making things for</li><li>Talk about how their products work</li></ul>	<ul style="list-style-type: none"><li>say who their products are for</li><li>Talk about how their products will work</li></ul>	<ul style="list-style-type: none"><li>describe what their products are for say how their products will work</li><li>say how they will make their products suitable for their intended users</li><li>use simple design criteria to help develop their ideas</li></ul>	<ul style="list-style-type: none"><li>describe what their products are for say how their products will work</li><li>explain how particular parts of their products work</li><li>use design criteria to shape their ideas</li></ul>	<ul style="list-style-type: none"><li>explain how the features of their products will appeal to intended users</li><li>explain how particular parts of their products work</li><li>gather information about the needs and wants of particular individuals and groups</li><li>develop their own simple design criteria and use these to shape their ideas</li></ul>	<ul style="list-style-type: none"><li>describe the purpose of their products</li><li>indicate the design features of their products that will appeal to the intended users</li><li>explain how particular parts of their products work</li><li>gather information about the needs and wants of particular individuals and groups</li><li>develop a simple design specification to guide their thinking</li></ul>	<ul style="list-style-type: none"><li>describe the purpose of their products</li><li>indicate the design features of their products that will appeal to intended users</li><li>explain how particular parts of their products work</li><li>use market research to inform ideas</li><li>develop a design specification to guide their thinking</li></ul>
	Ideas	<ul style="list-style-type: none"><li>Use ideas from imagination or the world to make something</li></ul>	<ul style="list-style-type: none"><li>Use own ideas to make something</li><li>Test out some ideas and materials with support</li></ul>	<ul style="list-style-type: none"><li>Use own experiences in their ideas</li><li>draw ideas and explain why they have been chosen</li><li>model ideas (try materials, parts and construction kits)</li><li>make a templates and mock-ups</li></ul>	<ul style="list-style-type: none"><li>design a product, how it looks and works</li><li>think through ideas with someone else</li><li>model ideas using prototypes and pattern pieces</li><li>draw and label my design</li><li>use ICT to design to develop and communicate their ideas</li></ul>	<ul style="list-style-type: none"><li>share and clarify ideas through discussion</li><li>model ideas using prototypes and pattern pieces</li><li>use annotated sketches to develop and communicate ideas</li><li>use ICT to design to develop and communicate their ideas</li></ul>	<ul style="list-style-type: none"><li>share and clarify ideas through discussion</li><li>model ideas using prototypes and pattern pieces</li><li>use annotated sketches and cross-sectional drawings to develop and communicate their ideas</li><li>use ICT to develop and communicate their ideas</li><li>generate ideas drawn from research</li></ul>	<ul style="list-style-type: none"><li>share and clarify ideas through discussion</li><li>model ideas using prototypes and pattern pieces</li><li>use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas</li><li>use ICT to develop and communicate their ideas</li><li>generate innovative ideas, drawing on research</li><li>make design decisions, taking account of constraints such as time and resources</li></ul>
Making	Planning	<ul style="list-style-type: none"><li>Talk about how their idea will work</li></ul>	<ul style="list-style-type: none"><li>Explain how they will make their product</li></ul>	<ul style="list-style-type: none"><li>Choose tools and materials and explain why they have been chosen</li><li>Make a simple plan before making</li></ul>	<ul style="list-style-type: none"><li>select tools and equipment suitable for the task</li><li>follow a step by step plan, choosing the right materials and tools</li></ul>	<ul style="list-style-type: none"><li>explain their choice of tools and equipment in relation to the skills and techniques they will be using and the task</li><li>Choose materials and components according to how they work and look</li><li>order the main stages of making</li></ul>	<ul style="list-style-type: none"><li>select tools and equipment suitable for the task</li><li>explain their choice of tools and equipment in relation to the skills and techniques they will be using</li><li>select materials and components suitable for the task</li><li>explain their choice of materials and components according to functional properties and aesthetic qualities</li><li>produce appropriate lists of tools, equipment and materials that they will need</li><li>make step-by-step plans as a guide to making</li></ul>	
	Practical skills and techniques	<ul style="list-style-type: none"><li>Use scissors to cut straight and curved lines.</li><li>Cut around marked lines with increased accuracy</li><li>Colour finished work</li></ul>	<ul style="list-style-type: none"><li>use scissors safely to cut around a marked line</li><li>Make a product which moves</li><li>Colour my finished product</li></ul>	<ul style="list-style-type: none"><li>Join and combine materials in different ways</li><li>Choose appropriate resources and tools safely</li><li>measure, mark out, cut and shape materials</li><li>use finishing techniques, including those from art and design</li></ul> <p><b>Food:</b></p> <ul style="list-style-type: none"><li>how to prepare simple dishes safely and hygienically without heat</li><li>how to use techniques such as cutting, peeling and grating</li></ul>	<ul style="list-style-type: none"><li>follow procedures for safety and hygiene</li><li>use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components</li><li>measure, mark out, cut and shape materials and components with some accuracy</li><li>assemble, join and combine materials and components with some accuracy</li><li>apply a range of finishing techniques, including those from art and design, with some accuracy</li></ul> <p><b>Food:</b></p> <ul style="list-style-type: none"><li>prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source</li><li>how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</li></ul>	<ul style="list-style-type: none"><li>follow procedures for safety and hygiene</li><li>use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components</li><li>accurately measure, mark out, cut and shape materials and components</li><li>accurately assemble, join and combine materials and components</li><li>accurately apply a range of finishing techniques, including those from art and design</li><li>use techniques that involve a number of steps</li><li>demonstrate resourcefulness when tackling practical tasks</li></ul> <p><b>Food:</b></p> <ul style="list-style-type: none"><li>how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source</li><li>how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking</li><li>adapt recipes to change the appearance, taste, texture and aroma</li></ul>		
Evaluating	Own ideas and products	<ul style="list-style-type: none"><li>talk about their design ideas and what they are making</li><li>Say if their idea worked</li></ul>	<ul style="list-style-type: none"><li>talk about their design ideas and what they are making</li><li>Say if their idea worked</li></ul>	<ul style="list-style-type: none"><li>make simple judgements about their products and ideas against design criteria</li><li>suggest how their products could be improved</li></ul>	<ul style="list-style-type: none"><li>Show how their final product meets the design criteria</li><li>Explain what went well and what they would change in their final design</li></ul>	<ul style="list-style-type: none"><li>explain what went well and what they would change</li><li>use design criteria as they design and make</li><li>use their design criteria to evaluate their completed products</li><li>explain how they improved their original design</li></ul>	<ul style="list-style-type: none"><li>identify the strengths and areas for development in their ideas and products</li><li>consider the views of others, including intended users</li><li>critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make</li><li>evaluate their ideas and products against their original design specification</li></ul>	



		EYFS	Year 1 & 2	Year 3	Year 4	Year 5	Year 6
Investigating existing products		<ul style="list-style-type: none"><li>talk about how toys work and what different parts do.</li></ul>	<ul style="list-style-type: none"><li>who are they for?</li><li>what are they for?</li><li>how does it work?</li><li>how and where are they used</li><li>what materials is it made from?</li><li>what do you like and dislike about it?</li></ul>	<ul style="list-style-type: none"><li>how well have products been designed and made?</li><li>why have those materials been chosen?</li><li>what methods of construction have been used?</li><li>how well do they work and achieve their purposes and meet user needs and wants?</li></ul> <p><b><u>Investigate and analyse:</u></b></p> <ul style="list-style-type: none"><li>where products were designed and made</li><li>when products were designed and made</li><li>whether products can be recycled or reused</li></ul>		<ul style="list-style-type: none"><li>how well have products been designed and made?</li><li>why have those materials been chosen?</li><li>what methods of construction have been used?</li><li>how well do they work and achieve their purposes and meet user needs and wants?</li></ul> <p><b><u>Investigate and analyse:</u></b></p> <ul style="list-style-type: none"><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>	

		EYFS	Year 1 & 2 Cycle A		Year 1 & 2 Cycle B		Year 3	Year 4	Year 5	Year 6	
Technical knowledge	Designers	<ul style="list-style-type: none"><li></li></ul>					<ul style="list-style-type: none"><li>understand how key events and individuals in design and technology have helped shape the world</li><li>*Hero of Alexandria (Greek mathematician and engineer who created some of the earliest known pneumatic device)</li></ul>	<ul style="list-style-type: none"><li>understand how key events and individuals in design and technology have helped shape the world.</li><li>Use learning from science and maths helps design and make products that work</li><li>*Thomas Edison (light bulb)</li></ul>	<ul style="list-style-type: none"><li>understand how key events and individuals in design and technology have helped shape the world.</li><li>Use learning from science and maths helps design and make products that work</li><li>*Brunel (Structures -Bridges)</li></ul>	<ul style="list-style-type: none"><li>understand how key events and individuals in design and technology have helped shape the world.</li><li>Use learning from science and maths helps design and make products that work</li><li>*Nadiya Husssain (Baker)</li></ul>	
	textiles	<ul style="list-style-type: none"><li>explore what materials are like.</li></ul>	Y1 (banners) <ul style="list-style-type: none"><li>joining fabric using glue</li><li>know that felt does not fray</li></ul>	Y2 (banners) <ul style="list-style-type: none"><li>joining fabric using running stich</li><li>know that felt does not fray</li></ul>	<ul style="list-style-type: none"><li>Y1 (puppets)</li><li>Joining fabric using glue</li><li>that a 3-D textiles product can be assembled from two identical fabric shapes</li></ul>	<ul style="list-style-type: none"><li>Y2 (puppets)</li><li>Joining fabric using running stich</li><li>that a 3-D textiles product can be assembled from two identical fabric shapes</li></ul>	<ul style="list-style-type: none"><li>that materials have both functional properties and aesthetic qualities</li><li>that a single fabric shape can be used to make a 3D textiles product</li></ul>	<ul style="list-style-type: none"><li>Know materials can be combined and mixed to create more useful characteristics</li></ul>	<ul style="list-style-type: none"><li>that materials have both functional properties and aesthetic qualities</li><li>that materials can be combined and mixed to create more useful characteristics</li><li>that a 3D textiles product can be made from a combination of fabric shapes</li></ul>		
	Structure	<ul style="list-style-type: none"><li>explore building structures from construction materials (blocks)</li></ul>			<ul style="list-style-type: none"><li>Know how to make structures stronger, stiffer, and more stable</li></ul>		<ul style="list-style-type: none"><li>how to make strong, stiff shell structures</li></ul>	<ul style="list-style-type: none"><li>how to make strong, stiff shell structures</li></ul>	<ul style="list-style-type: none"><li>how to reinforce and strengthen a 3D framework (e.g. triangulation, Jinx Joints, cross beams)</li></ul>		
	Mechanism	<ul style="list-style-type: none"><li></li></ul>	Y1 Create a moving picture using a slider	Y2 Create a moving picture using a slider and leaver (split pin) <ul style="list-style-type: none"><li></li></ul>	<ul style="list-style-type: none"><li>Know how to make a model move using simple mechanisms such as levers, sliders, wheels and axles</li><li>about the movement of simple mechanisms such as levers, sliders, wheels, and axles</li></ul>		<ul style="list-style-type: none"><li>how mechanical systems such as levers and linkages create movement</li></ul>	<ul style="list-style-type: none"><li>how mechanical systems such as levers and linkages or pneumatic systems create movement</li><li>Know how simple electrical circuits and components can be used to create functional products</li></ul>	<ul style="list-style-type: none"><li>how mechanical systems such as cams or pulleys or gears create movement</li><li>that mechanical and electrical systems have an input, process and output</li><li>how to program a computer to monitor changes in the environment and control their products</li></ul>		
	Food	<ul style="list-style-type: none"><li></li></ul>	<ul style="list-style-type: none"><li>that all food comes from plants or animals</li><li>that everyone should eat at least five portions of fruit and vegetables every day</li></ul>		<ul style="list-style-type: none"><li>know that food has to be farmed, grown elsewhere (e.g., home) or caught</li><li>that food ingredients should be combined according to their sensory characteristics</li><li>how to name and sort foods into the five groups in The Eatwell plate</li></ul>		<ul style="list-style-type: none"><li>know that food is <b>grown</b> (such as tomatoes, wheat and potatoes), <b>reared</b> (such as pigs, chickens and cattle) and <b>caught</b> (such as fish) in the UK, Europe and the wider world.</li><li>Know that seasons may affect the food available</li><li>that food ingredients can be fresh, pre-cooked and processed</li><li>that to be active and healthy, food and drink are needed to provide energy for the body and a range of coloured foods provide us with a range of nutrients.</li></ul>	<ul style="list-style-type: none"><li>know how food is processed into ingredients (flour and sugar) that can be eaten or used in cooking</li><li>know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the Eatwell plate</li></ul>	<ul style="list-style-type: none"><li>Know that seasons may affect the food available; soup made in the autumn, will be different to soup made in the summer (if using locally sources ingredients)</li><li>Know the environmental impact of food and food miles</li><li>Know that different food and drink contain different substances – nutrients, water and fibre – that are needed for health. The bigger the range of colours, the better the health benefits.</li></ul>	<ul style="list-style-type: none"><li>Know how food (yeast reacting with sugar) is processed into ingredients that can be eaten or used in cooking</li><li>that a recipe can be adapted by adding or substituting one or more ingredients</li></ul>	

See year group unit plans for detail on specific knowledge.

## National Curriculum Coverage for DT

Our Crossdale Curriculum covers all National Curriculum requirements in full, as *detailed in the medium-term plan and progression* documents per group.

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

*When designing and making, Key stage 1 pupils should be taught:*

- To design purposeful, functional, appealing products for themselves and other users based on design criteria
- To generate, develop, model, and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining, and finishing]
- To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- To explore and evaluate a range of existing products
- To evaluate their ideas and products against design criteria
- To build structures, exploring how they can be made stronger, stiffer and more stable
- To explore and use mechanisms [for example, levers, sliders, wheels and axles] in their products

*When designing and making, Key stage 2 pupils should be taught:*

- To use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups
- To generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- To select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining, and finishing], accurately
- To select from and use a wider range of materials and components, including construction materials, textiles, and ingredients, according to their functional properties and aesthetic qualities
- To investigate and analyse a range of existing products
- To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- To understand how key events and individuals in design and technology have helped shape the world
- To apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers, and linkages]
- To understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers, and motors]
- To apply their understanding of computing to program, monitor and control their products