



“Design is not just what it looks like and feels like. Design is how it works.” Steve Jobs, Co-founder Apple Inc

Intent

Our Design Technology curriculum has been carefully planned and designed to encompass the content of the National Curriculum and ensure that it reflects and is distinct to our locality.

- Pupils’ design technology education begins in the early years and builds year on year, developing pupils’ expertise.
- Curriculum plans have been constructed effectively to ensure that pupils know more, remember more and are able to do more.
- Golden Threads, based on the four key strands as well as cooking and nutrition have been identified for each year group and underpin the key knowledge and concepts taught through our curriculum.
- Key knowledge has been mapped out from the early years to the end of KS2 to ensure that the curriculum is coherently sequenced and there is clear progression.
- The organisation of the curriculum builds knowledge so that pupils can draw on it in future learning.
- Vocabulary has been identified and outlined clearly so that this can be taught explicitly within lessons.
- Clearly defined end points have been identified to ensure that pupils build upon prior learning and develop their knowledge of key concepts.
- Pupils commit knowledge to their long-term memory through recalling and repeated practice outlined in plans.

Implementation

Within and beyond our classrooms we provide a range of opportunities and implement a range of teaching methods to ensure that over the course of study, teaching is designed to help learners to remember in the long term the content they have been taught and to integrate new knowledge into larger concepts.

- Knowledge organisers which outline knowledge (including vocabulary) all children must master and apply in lessons are introduced at the start and referred to throughout a unit of study.
- A well sequenced cycle of lessons carefully plans for progression and depth concentrating on design technology knowledge and skills suited to the age group.
- Lessons follow a consistent structure of: retrieval, explanation, application and assessment which may include such features as questioning, modelling, individual, partner, group or whole class activities.
- Enrichment activities/visits are carefully used where appropriate to ensure pupils are able to practise and apply their knowledge and skills.
- Our inclusive approach is demonstrated through the way in which tasks and activities are adapted to ensure that all pupils are able to access the curriculum.
- Through retrieval, teachers make sure that pupils can draw on what they already know so that they can remember more.
- Key vocabulary is explicitly taught to enable pupils to develop their range of design technology vocabulary and understanding.
- Assessment for learning strategies are used at the start, during and at the end of lessons to assess pupils’ learning and identify any gaps or misconceptions.

Impact

- Our Design Curriculum is high quality, well thought out and is planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress. In addition, we measure the impact of our curriculum through the following methods:
 - Pre and post unit assessments
 - Assessment against ‘End of Year Expectations’ with clearly identified end points. These are then passed to the receiving teacher to ensure any gaps can be addressed when a key concept is revisited.



GOLDEN THREADS	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Designing	<u>EAD: Creating with materials</u> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used.	Understanding Contexts, Users and Purposes Across KS1 pupils should: <ul style="list-style-type: none"> work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment state what products they are designing and making say whether their products are for themselves or other users describe what their products are for say how their products will work say how they will make their products suitable for their intended users use simple design criteria to help develop their ideas 		Understanding Contexts, Users and Purposes Across KS2 pupils should: <ul style="list-style-type: none"> work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment describe the purpose of their products indicate the design features of their products that will appeal to intended users explain how particular parts of their products work In early KS2 pupils should also: <ul style="list-style-type: none"> gather information about the needs and wants of individuals and groups develop their own design criteria and use these to inform their ideas In late KS2 pupils should also: <ul style="list-style-type: none"> carry out research, using surveys, interviews, questionnaires and web-based resources identify the needs, wants, preferences and values of individuals and groups develop a simple design specification to guide their thinking 			
		Generating, Developing, Modelling and Communicating Ideas Across KS1 pupils should: <ul style="list-style-type: none"> generate ideas by drawing on their own experiences use knowledge of existing products to help come up with ideas develop and communicate ideas by talking and drawing model ideas by exploring materials, components and construction kits and by making templates and mock-ups use information and communication technology, where appropriate, to develop and communicate their ideas 		Generating, Developing, Modelling and Communicating Ideas Across KS2 pupils should: <ul style="list-style-type: none"> share and clarify ideas through discussion model their ideas using prototypes and pattern pieces use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas use computer-aided design to develop and communicate their ideas In early KS2 pupils should also: <ul style="list-style-type: none"> generate realistic ideas, focusing on the needs of the user make design decisions that take account of the availability of resources In late KS2 pupils should also: <ul style="list-style-type: none"> generate innovative ideas, drawing on research make design decisions, taking account of constraints such as time, resources and cost 			
Making	<u>EAD: Creating with materials</u> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations,	Planning Across KS1 pupils should: <ul style="list-style-type: none"> plan by suggesting what to do next select from a range of tools and equipment, explaining their choices select from a range of materials and components according to their characteristics 		Planning Across KS2 pupils should: <ul style="list-style-type: none"> select tools and equipment suitable for the task explain their choice of tools and equipment in relation to skills and techniques they will be using select materials and components suitable for the task explain their choice of materials and components according to functional properties and aesthetic qualities In early KS2 pupils should also: <ul style="list-style-type: none"> order the main stages of making In late KS2 pupils should also: <ul style="list-style-type: none"> produce appropriate lists of tools, equipment and materials that they need formulate step-by-step plans as a guide to making 			



	<p>explaining the process they have used.</p> <p><u>PD: Fine motor</u> Use a range of small tools, including scissors, paintbrushes and cutlery.</p>	<p>Practical Skills and Techniques Across KS1 pupils should:</p> <ul style="list-style-type: none"> • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design 	<p>Practical Skills and Techniques Across KS2 pupils should:</p> <ul style="list-style-type: none"> • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components <p>In early KS2 pupils should also:</p> <ul style="list-style-type: none"> • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy <p>In late KS2 pupils should also:</p> <ul style="list-style-type: none"> • accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components • accurately apply a range of finishing techniques, including those from art and design • use techniques that involve a number of steps • demonstrate resourcefulness when tackling practical problems
Evaluating Products	<p><u>EAD: Creating with materials</u> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used.</p>	<p>Own Ideas and Products Across KS1 pupils should:</p> <ul style="list-style-type: none"> • talk about their design ideas and what they are making • make simple judgements about their products and ideas against design criteria • suggest how their products could be improved 	<p>Own Ideas and Products Across KS2 pupils should:</p> <ul style="list-style-type: none"> • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work • In early KS2 pupils should also: • refer to their design criteria as they design and make • use their design criteria to evaluate their completed products • In late KS2 pupils should also: • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • evaluate their ideas and products against their original design specification
		<p>Existing Products Across KS1 pupils should explore:</p> <ul style="list-style-type: none"> • what products are • who products are for • what products are for • how products work • how products are used • where products might be used • what materials products are made from • what they like and dislike about products 	<p>Existing Products Across KS2 pupils should investigate and analyse:</p> <ul style="list-style-type: none"> • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants <p>In early KS2 pupils should also investigate and analyse:</p> <ul style="list-style-type: none"> • who designed and made the products • where products were designed and made • when products were designed and made • whether products can be recycled or reused <p>In late KS2 pupils should also investigate and analyse:</p> <ul style="list-style-type: none"> • how much products cost to make • how innovative products are • how sustainable the materials in products are • what impact products have beyond their intended purpose



			Key Events and Individuals Across KS2 pupils should know: <ul style="list-style-type: none"> about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products
Technical Knowledge	EAD: Creating with materials Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used.	Making Products Work Across KS1 pupils should know: <ul style="list-style-type: none"> about the simple working characteristics of materials and components about the movement of simple mechanisms such as levers, sliders, wheels and axles how freestanding structures can be made stronger, stiffer and more stable that a 3-D textiles product can be assembled from two identical fabric shapes that food ingredients should be combined according to their sensory characteristics the correct technical vocabulary for the projects they are undertaking 	Making Products Work Across KS2 pupils should know: <ul style="list-style-type: none"> how to use learning from science to help design and make products that work how to use learning from mathematics to help design and make products that work that materials have both functional properties and aesthetic qualities that materials can be combined and mixed to create more useful characteristics that mechanical and electrical systems have an input, process and output the correct technical vocabulary for the projects they are undertaking In early KS2 pupils should also know: <ul style="list-style-type: none"> how mechanical systems such as levers and linkages or pneumatic systems create movement how simple electrical circuits and components can be used to create functional products how to program a computer to control their products how to make strong, stiff shell structures that a single fabric shape can be used to make a 3D textiles product that food ingredients can be fresh, pre-cooked and processed In late KS2 pupils should also know: <ul style="list-style-type: none"> how mechanical systems such as cams or pulleys or gears create movement how more complex electrical circuits and components can be used to create functional products how to program a computer to monitor changes in the environment and control their products how to reinforce and strengthen a 3D framework that a 3D textiles product can be made from a combination of fabric shapes that a recipe can be adapted by adding or substituting one or more ingredients
		Food Preparation, Cooking and Nutrition Across KS1 pupils should know: <ul style="list-style-type: none"> how to name and sort foods into the five groups in The Eatwell plate that everyone should eat at least five portions of fruit and vegetables every day how to prepare simple dishes safely and hygienically, without using a heat source how to use techniques such as cutting and peeling 	Food Preparation, Cooking and Nutrition Across KS2 pupils should know: <ul style="list-style-type: none"> how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking In early KS2 pupils should also know: <ul style="list-style-type: none"> that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell plate that to be active and healthy, food and drink are needed to provide energy for the body In late KS2 pupils should also know: <ul style="list-style-type: none"> that recipes can be adapted to change the appearance, taste, texture and aroma that different food and drink contain different substances – nutrients, water and fibre – that are needed for health



Upper KS2	Autumn Term Textiles – Make Do and Mend	Spring Term Food and Nutrition	Summer Term Electrical systems/programming and control
Prior Knowledge (Retrieval)	<p>Y2- Talk about making a hand puppet Y4- Talk about sewing a Christmas stocking</p> <p>Design</p> <ul style="list-style-type: none"> Describe why the design process is important. Identify the different stages of the design process. Identify why pattern pieces were necessary when designing their stocking? <p>Making</p> <ul style="list-style-type: none"> Identify why a plan is important pre the making stage. Identify materials and tools used previously when making a textile product. Explain their choices. Describe finishing techniques used previously. <p>Evaluating</p> <ul style="list-style-type: none"> Explain why it is important to evaluate pre-existing products. Explain why it is important to evaluate their own products. <p>Technical Knowledge</p> <ul style="list-style-type: none"> Identify types of stitches used previously. 	<p>Y5- Talk about making savoury biscuits</p> <p>Design</p> <ul style="list-style-type: none"> Describe why the design process is important. Identify the different stages of the design process. <p>Making</p> <ul style="list-style-type: none"> Identify why a plan is important pre the making stage. Identify ingredients and tools used previously when making a food product. Explain reasons for their choice of ingredients/tools. Describe finishing techniques used previously. <p>Evaluating</p> <ul style="list-style-type: none"> Explain why it is important to evaluate pre-existing products. Explain why it is important to evaluate their own products. <p>Technical Knowledge</p> <ul style="list-style-type: none"> Name and sort foods into the 5 groups of the Eatwell Plate (fruits, vegetables, carbohydrates, protein, dairy and other alternatives and oils and spread. Give examples of how food is processed into ingredients. Give examples of how seasonality may affect food availability. 	<p>Y3-Talk about Computer Aided Design for treehouses and how they used simple electrical circuits in their Christmas stockings.</p> <p>Design</p> <ul style="list-style-type: none"> Explain why Computer Aided Design was used to make treehouses (Why was CAD important to make treehouses?) Why did they use an electrical circuit in their Christmas stocking? <p>Making</p> <ul style="list-style-type: none"> Talk about electrical systems and how they have an input and a process. Identify how they used a simple electrical circuit in a functional product. <p>Evaluating</p> <ul style="list-style-type: none"> Explain why it is important to evaluate pre-existing products. Explain why it is important to evaluate their own products. <p>Technical Knowledge</p> <ul style="list-style-type: none"> Identify how a simple electrical circuit and components can be used to create functional products Know electrical systems have an input and a process
Y6 Key person/event Influential computer scientists.	<p>D & T Element – Textiles Repurposing materials to create a new product 'Make Do and Mend' linked to WW2</p> <p><u>Knowledge and Skills to be developed:</u></p> <p><u>Designing</u> Generate innovative ideas, drawing on research. Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their design ideas. Model their ideas using prototypes and Make designs, taking account of constraints such as time, resources and cost.</p>	<p>D & T Element – Food <u>Design and make a breakfast bar using a range of ingredients found in the rainforest/fair-trade foods.</u></p> <p><u>Knowledge and Skills to be developed:</u></p> <p><u>Designing</u> Generate innovative ideas, drawing on research. Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their design ideas. Make designs, taking account of constraints such as time, resources, availability of ingredients and cost.</p>	<p>D & T Element – Electrical systems/Programming and control <u>Use Crumble to program and control a nightlight which could be used in your room when staying in London.</u></p> <p><u>Knowledge and Skills to be developed:</u></p> <p><u>Designing</u> Generate innovative ideas, drawing on research. Use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their design ideas. Make designs, taking account of constraints such as time, resources and cost.</p>



	<p>Making Formulate step by step plans as a guide to making. Produce appropriate lists of tools, equipment, materials and components that they need- needles, scissors, threads Accurately measure, mark out, cut and shape materials and components- fabric, threads Accurately assemble, join and combine materials and components- running stitch, back stitch, over stitch, zig zag stitch, hidden stitches and visible stitch (overstitch or blanket stitch), fastenings and learning to secure their last stitch. Accurately apply a range of finishing techniques, including those from art and design. - applique</p> <p>Evaluating Investigate and analyse a range of existing products Evaluate their ideas and products against their original design specification. Consider the views of others, including intended users, to improve their work.</p> <p>Technical Knowledge Know the correct technical vocabulary for the products they are undertaking, fabric, blanket stitch, technique, regularity of stitches</p>	<p>Making Formulate step by step plans as a guide to making. Produce appropriate lists of tools, equipment, materials and components that they need. Ingredients, weighing scales, utensils, oven Accurately apply a range of finishing techniques, including those from art and design.</p> <p>Evaluating Investigate and analyse a range of existing products Evaluate their ideas and products against their original design specification. Consider the views of others, including intended users, to improve their work.</p> <p>Technical Knowledge Know the correct technical vocabulary for the products they are undertaking-Fairtrade, sustainable, sustainability balanced diet</p> <p>Cooking and Nutrition Identify that food is grown, reared and caught in the UK, Europe and the wider world. Identify that seasons may affect the food available Describe how food is processed into ingredients that can be eaten or used in cooking. Identify that a healthy diet is made up from a variety and balance of different food and drink, (Eatwell plate). Fruit and vegetables Carbohydrates Protein Dairy and other alternatives Oil and spreads Prepare and cook healthy breakfast bars safely and hygienically. Use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.</p>	<p>Making Formulate step by step plans as a guide to making. Produce appropriate lists of tools, equipment, materials and components that they need- programming equipment Accurately assemble, join and combine materials and components- programming equipment Accurately apply a range of finishing techniques, including those from art and design.</p> <p>Evaluating Investigate and analyse a range of existing products Evaluate their ideas and products against their original design specification. Consider the views of others, including intended users, to improve their work. Name and describe some inventors and how their inventions have shaped the world. Night light Alan Turing (Scientist and Engineer) Charles Babbage (inventor of the first mechanical computer) Ada Lovelace (world's first computer programmer)</p> <p>Technical Knowledge Know the correct technical vocabulary for the products they are undertaking-functioning circuit, conductor, series circuit, parallel circuit Reinforce and strengthen a 3D framework. Night light</p>
All Vocabulary	Thread(s), fabric, stitch, needles, materials, fastenings, method, running stitch, Design, purpose, audience, test	method, ingredients, research, quantities, timescales, texture, innovative., value for money, cost- effective, combination, equipment, design specification, nutrient, hygiene	electronic, simple, electrical control, circuit, labelled design, positive, negative, LED, battery, identifying, components, generating, modelling, prototypes, testing, identifying, improvements, night light
Most Vocabulary	Components, prototype, design criteria, functionality, evaluate, improve, fastenings, back stitch, over-stitch, blanket stitch,	Methods, quantities, timescales, process, ingredients. equipment, health and safety, Fair Trade, sustainable	design criteria, mapping out, components, constructing, high quality, testing, incorporating, suggestions, evaluating, feedback, Alan Turing, computer programming
Some Vocabulary	Applique, hidden stitch, visible stitch, aesthetics	completed product, original design, modifications, reliability, aesthetics, incorporate adapting	Magnetic field, key components, functioning circuit, parallel circuit



Quality texts	Make Do and Mend Replica booklet	Explore! Fair Trade	Ada Lovelace 10 (little people, big dreams)
Enrichment activities (visits/ visitors)	Science and Engineering Week – Scarborough Spa	The Fun Filled Food Journey workshop	
National Curriculum	<p>Design</p> <ul style="list-style-type: none"> Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups Generate, develop, model and communicate their ideas through discussion, annotated sketches, and exploded diagrams, pattern pieces <p>Make</p> <ul style="list-style-type: none"> Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately Select from and use a wider range of materials and components, including textiles according to their functional properties and aesthetic qualities <p>Evaluate</p> <ul style="list-style-type: none"> Investigate and analyse a range of existing products Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key events in design and technology have helped shape the world <p>Technical knowledge</p> <ul style="list-style-type: none"> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures 	<p>Design</p> <ul style="list-style-type: none"> Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, <p>Make</p> <ul style="list-style-type: none"> Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately Select from and use a wider range of materials and components, including ingredients, according to their functional properties and aesthetic qualities <p>Evaluate</p> <ul style="list-style-type: none"> Investigate and analyse a range of existing products Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work <p>Cooking and Nutrition</p> <ul style="list-style-type: none"> Understand and apply the principles of a healthy and varied diet Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 	<p>Design</p> <ul style="list-style-type: none"> Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, and computer-aided design <p>Make</p> <ul style="list-style-type: none"> Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately Select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities <p>Evaluate</p> <ul style="list-style-type: none"> Investigate and analyse a range of existing products Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key individuals in design and technology have helped shape the world <p>Technical knowledge</p> <ul style="list-style-type: none"> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] Apply their understanding of computing to program, monitor and control their products.



Gladstone Road Primary School Design Technology

Curriculum Plans