Gladstone Road Primary School Design Technology

Curriculum Plans

"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 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.

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GOLDEN THREADS	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Designing	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.	**Understanding Contexts, Users and Purposes** Across KS1 pupils should: • work confidently within a rangeof contexts, such as imaginary,story-based, home, school, gardens, playgrounds, local community, industry and the wider environment • state what products they aredesigning and making • say whether their products arefor themselves or other users • describe what their productsare for • say how their products willwork • say how they will make theirproducts suitable for their intended users • use simple design criteria tohelp develop their ideas		**Understanding Contexts, Users and Purposes** Across KS2 pupils should: • 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: • 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: • 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: • 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: • 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: • 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: • generate innovative ideas, drawing on research • make design decisions, taking account of constraints such as time, resources and cost			
Making	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,	**Planning** Across KS1 pupils should: • 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: • select tools and equipment suitable for the task • explain their choice of tools and equipment in relation to the 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: • order the main stages of making In late KS2 pupils should also: • produce appropriate lists of tools, equipment and materials that they need			

	explaining the process they have used. PD: Fine motor Use a range of small tools, including scissors, paintbrushes and cutlery.		• formulate step-by-step plans as a guide to making
		Practical Skills and Techniques Across KS1 pupils should: • 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	**Practical Skills and Techniques** Across KS2 pupils should: • 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 In early KS2 pupils should also: • 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 In late KS2 pupils should also: • 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	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.	**Own Ideas and Products** Across KS1 pupils should: • 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	**Own Ideas and Products** Across KS2 pupils should: • 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
		Existing Products Across KS1 pupils should explore: • 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	**Existing Products** Across KS2 pupils should investigate and analyse: • 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 In early KS2 pupils should also investigate and analyse: • 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 In late KS2 pupils should also investigate and analyse: • 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: • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products
Technical Knowledge	<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.	**Making Products Work** Across KS1 pupils should know: • 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: • 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: • 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: • 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
Cooking and Nutrition	<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. <u>PD: Fine motor</u> Use a range of small tools, including scissors, paintbrushes and cutlery.	**Where Food Comes From** Across KS1 pupils should know: • that all food comes from plants or animals • that food has to be farmed, grown elsewhere (e.g. home) or caught	**Where Food Comes From** Across KS2 pupils should 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. In late KS2 pupils should also know: • that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking
		Food Preparation, Cooking and Nutrition Across KS1 pupils should know: • 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: • 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: • 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: • 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

KS1	Autumn Term	Spring Term	Summer Term
Prior Knowledge (Retrieval)	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. • How to make a simple sandwich and chose the correct tools for buttering and cutting. • How to offer a simple evaluation of their creation and whether it is fit for purpose or if the desired outcome has been achieved. PD: Fine motor Use a range of small tools, including scissors, paintbrushes and cutlery. • Use a range of tools competently, safely and confidently e.g. pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. PSED: Managing Self *Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.* • The terms 'healthy' and 'unhealthy'. • Vegetables and fruit help to keep us 'healthy'.	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. • Different materials have different 'properties' and how this influences the creation process i.e. recognise card is stronger than paper when creating a 3D structure. • Construct a paper lantern by cutting vertical lines in paper and using glue to fix the structure. • Create stick puppets from a variety of resources without templates. • Join materials together to make a simple structure i.e using lollypop sticks to make a ladder for pirates/rescuing Rapunzel. • Discuss their creations and functionality. PD: Fine motor Use a range of small tools, including scissors, paintbrushes and cutlery. • Use a range of tools competently, safely and confidently e.g. pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.	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. • Different materials have different 'properties' and how this influences the creation process i.e. recognise card is stronger than paper when creating a 3D structure. • Split pins can be used to create 'moving parts' to their creations. UTW: The World • Know that familiar moveable toys have different mechanisms- sliders/levers/ string/ buttons. PD: Fine motor Use a range of small tools, including scissors, paintbrushes and cutlery. • Use a range of tools competently, safely and confidently e.g. pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons.
Y1	**D & T Element – Food and nutrition** Fruit Salad Knowledge and Skills to be developed: **Designing:** Use given simple design criteria to design their own products by making simple drawings and labelling parts.	**D & T Element - Structures** Making a house for Percy Knowledge and Skills to be developed: **Designing:** Use given simple design criteria to design their own products by making simple drawings and labelling parts.	**D & T Element - Mechanisms** STEM - Boats Knowledge and Skills to be developed: **Designing:** Use given simple design criteria to design their own products by making simple drawings and labelling parts.

	Create simple templates and mock-ups based on their own simple designs. **Making:** Plan by suggesting what to do next. Select from a range of tools and equipment to perform practical tasks. Knives and scissors Select from and use a range of materials and components according to their characteristics. With help, measure, mark and cut a range of materials. Fruit **Technical Knowledge:** To use correct technical vocabulary vegetable, fruit. texture, grouping, apron. **Cooking and Nutrition:** Describe that all food comes from plants and animals. Prepare a simple dish safely and hygienically, without using a heat source. Cut, peel, and grate **Evaluating:** Explore and evaluate a range of existing products. Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria.	Create simple templates and mock-ups based on their own simple designs. **Making** Plan by suggesting what to do next Select from a range of tools and equipment to perform practical tasks. Paper, card, and scissors, Select from and use a range of materials and components according to their characteristics. With help, measure, mark and cut a range of materials. Paper and card Use simple finishing techniques to improve the appearance of their product. Painting **Technical Knowledge:** Build freestanding structures. *(Explore ways to strengthen and stiffen to make more stable.) structure, strengthen* **Evaluating:** Explore and evaluate a range of existing products. Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria.	Create simple templates and mock-ups based on their own simple designs. **Making** Plan by suggesting what to do next Select from a range of tools and equipment to perform practical tasks. Paper, card and scissors. Select from and use a range of materials and components according to their characteristics. With help, measure, mark and cut a range of materials. Paper and card Use simple finishing techniques to improve the appearance of their product. **Technical Knowledge** Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products To use correct technical vocabulary *nets, joins, levers, sliders* **Evaluating** Explore and evaluate a range of existing products. Talk about their design ideas and what they are making. Make simple judgements about their products and ideas against design criteria.
Future learning	**Healthy vegetable wrap (Y2)** • Making a healthy vegetable wrap • Name and sort foods into the 5 groups in the Eatwell plate (fruit and vegetables, carbohydrates, protein, Dairy and other alternatives, oils and spreads)	**Mini Treehouse (Y3)** • Build a treehouse using wood • Draw annotated sketches and create a plan • Describe how mechanical systems create movement. • Learn more about inventors that have created	**Wheeled vehicles (Y2)** • Making a wheeled vehicle using wheels and axles • Use equipment such as saws, bench hooks and scissors
Design Vocabulary	Design, product, design criteria, drawings, labels, mock-up, purpose, user, materials, food groups, develop, communicate, sketch, suitable, ingredients	Design criteria, Requirements, Structure, Construction, Describing, 2D/3D shapes, Improvements, Construction, Functioning Stiffness Design, product, design criteria, drawings, labels, mock-up, purpose, user, materials, food groups, develop, communicate, sketch, suitable, structure, construction, stiffness, function	Design, product, design criteria, drawings, labels, mock-up, purpose, user, materials, function, properties, develop, communicate, sketch, suitable,
Make Vocabulary	Fruits, vegetables, seed, root, vine, stem, leaves, describing, fruit, vegetables, health, safety, hygiene, apron, knife, board, peel, grate, cut, core.	Scissors, Assemble, Change, Gluing, Sticking, Stapling, Stiffness, Cut, Measure, Cardboard, Paper, Roof, Doors Joins, Hinges, Windows, Chimney, Walls	Paddle, functioning, net, mechanisms, movement, assemble, shape.
Evaluate Vocabulary	Evaluating, reflecting, reviewing, improvements, compare, finished product, change, compare, taste, texture, Savoury, Sweet	Evaluating, reflecting, reviewing, improvements, compare, finished product, alter	Evaluating, reflecting, reviewing, improvements, compare, finished product, alter

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Technical Knowledge Vocabulary	Health, safety, hygiene	net, house, hinge, join, safety.	structure, vessel, scientist, function, boat
Quality texts	Oliver's Fruit Salad – Vivian French Oliver's Vegetables – Vivian French	Who Built That? Modern Houses: An Introduction to Modern Houses and Their Architects – Didier Cornille Percy the Park Keeper – Nick Butterworth	Look how things work – Usborne Little Miss Inventor – Roger Hargreaves
Enrichment visits (visits/ visitors)	Fun filled food Journey – visitor into school workshop		Visiting the beach to observe scener.
National Curriculum	Design • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria	Design • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria Technical knowledge • build structures, exploring how they can be made stronger, stiffer and more stable	Design • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria Technical knowledge • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

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KS1	Autumn Term Mechanisms – Buggy/Carriage	Spring Term Vegetable and Protein Wrap	Summer Term Hand Puppet
Prior Knowledge (Retrieval)	**EYFS/Year 1** Talk about simple mechanisms they have made before. Y1 – boat **Design** • Identify the function and purpose of their mechanism/structure. (What did they make? What did it need to be able to do?) • Identify that mock ups are part of the design process. (How did they know that their design would work?) **Make** • Identify materials they might use to build a mechanism. (What did they use to make their boat?)	**EYFS/Year 1** Talk about food they have made before. EYFS and Y1 – Fruit salad. • Describe that all food comes from plants and animals. • Identify a range of fruit and vegetables. • Identify if it possible to make something to eat without a heat source? • Identify simple hygiene rules. • Describe how to use tools to cut peel and grate and equipment safely knives and scissors.	**Learning outside of school** Talk about when they have made something out of fabric/textiles before. **Design** • Identify the function and purpose of their product. (What did they make? What was it for?) • Identify that mock ups are part of the design process. (Did they need to practise first? **Make** • Identify materials they used/might use to make a textile product. • Identify tools they used/might use to make a textile product.

	• Identify tools they might use to build a mechanism. (What did they use to make their boat?) • Identify that a plan is needed before beginning to build a structure/mechanism. (What do they need to do with all their ideas before they begin to make a mechanism?) • Identify simple finishing techniques to improve the appearance of a mechanism. (How did they make their boat look better?) **Evaluate** • Identify why they need to evaluate existing products and their own? (Existing products – to get ideas/ own product – to know what went well and what did not) **Vocabulary** • Check the children understand and can use the term structure.		• Identify that a plan is needed before beginning to make a product. (What do they need to do with all their ideas before they begin to make it?) **Evaluate** • Identify why they need to evaluate existing products and their own? (Existing products – to get ideas/ own product – to know what went well and what did not)
Y2	**D & T Element - Mechanisms** STEM – Buggy/carriages Knowledge and Skills to be developed: **Designing** Identify simple criteria for the intended user and purpose of their product. Make simple drawings and label materials and parts, describing what the purpose of their product is and how it will work. Create templates and mock-ups based on their own designs. **Making** Create a simple step by step plan. Select from a range of tools and equipment explaining their choices. Saws, bench hook and scissors Select from and use a range of materials and components according to their characteristics. Measure, mark, cut and shape a range of materials and components. Assemble, join and combine materials in order to make a product. Use finishing techniques to improve the appearance of their product. **Evaluating** Explore and evaluate a range of existing products. Make simple judgements about their products and ideas against design criteria.	**D & T Element – Food and nutrition** Vegetable and protein wrap Knowledge and Skills to be developed: **Designing** Identify simple criteria for the intended user and purpose of their product. Make simple drawings and label materials and parts, describing what the purpose of their product is and how it will work. **Making** Create a simple step by step plan. Select from a range of tools and equipment explaining their choices. Knives, scissors and spoons. Select from and use a range of materials and components according to their characteristics- range of vegetables Measure, mark, cut and shape a range of materials and components. Assemble, join and combine materials in order to make a product. Use finishing techniques to improve the appearance of their product. **Evaluating** Explore and evaluate a range of existing products. Make simple judgements about their products and ideas against design criteria.	**D & T Element - Textiles** Hand puppet Knowledge and Skills to be developed: **Designing** Identify simple criteria for the intended user and purpose of their product. Make simple drawings and label materials and parts, describing what the purpose of their product is and how it will work. Create templates and mock-ups based on their own designs. **Making** Create a simple step by step plan. Select from a range of tools and equipment explaining their choices. Scissors, needles and threads. Select from and use a range of materials and components according to their characteristics. Measure, mark, cut and shape a range of materials and components, threads and fabric Assemble, join and combine materials in order to make a product. Threading a needle, tying a knot and a running stitch. Use finishing techniques to improve the appearance of their product. **Evaluating** Explore and evaluate a range of existing products.

	Suggest how their products could be improved. **Technical Knowledge** Explore and use mechanisms in their products. Wheels and axles Build freestanding structures applying knowledge of how to make the structure stronger, stiffer and more stable.	Suggest how their products could be improved. **Technical Knowledge** Use the correct technical vocabulary for the projects they are undertaking, such as- slicing, cutting, peeling Know how to combine ingredients according to their sensory characteristics. **Cooking and Nutrition** Describe that all food comes from plants and animals. Identify that food has to be farmed, grown elsewhere or caught. Name and sort foods into the 5 groups in the Eatwell plate: Fruit and vegetables Carbohydrates Protein Dairy and other alternatives Oil and spreads Prepare a simple dish safely and hygienically, without using a heat source. Cut, grate, peel, fold and roll Links with Science	Make simple judgements about their products and ideas against design criteria. Suggest how their products could be improved. **Technical Knowledge** Use the correct technical vocabulary for the projects they are undertaking, such as- threading the needle, needle, thread, fastening, joining, identical shapes, running stitch.
Future Learning	**Pneumatic systems/Mini Treehouses (Y3)** • Create own design criteria • Draw annotated sketches • Create a plan – ordering the main stages of making • Select a wider range of materials/tools and be able to explain choices. • Assemble materials with accuracy. • Describe how mechanical systems create movement.	**Pizza (Y3)** • Identify that food is grown, reared and caught in the UK, Europe and the wider world. • Identify that a healthy diet is made up from a variety and balance of different food and drink, (Eatwell plate).	**Christmas Stockings (Y4)** • Making a Christmas stocking, joining materials using blanket stitch, overcast stitch, threading a needle and typing a knot. • Using simple electrical circuits and components to create electrical system with an input and input process. • Draw annotated sketches and cross-sectional drawings to communicate design ideas. • Model their ideas using prototypes and pattern pieces.
Design Vocabulary	Design, product, design criteria, drawings, labels, mock-up, purpose, user, audience, materials, parts, develop, communicate, sketch, suitable, strength, decorate, stable	Design, product, design criteria, drawings, labels, mock-up, purpose, user, audience, materials, food groups, develop, communicate, sketch, suitable, ingredients	Design, product, design criteria, drawings, labels, mock-up, purpose, user, audience, materials, parts, develop, communicate, fabric, sketch, suitable, strength, decorate
Make Vocabulary	Bench hook, saws, sawing, wooden dowel, wheel, axle, chassis, body, tools, components, measure, mark, assemble, join, strong, stable, techniques, decorate, finish	knives, chopping board, scissors, spoons, make, ingredients, fruit and vegetables, protein, carbohydrates, components, assemble, combine	Needle, thread, template, mock up, function, make, fastenings, join/joining, techniques, running stitch, assembling, features, components, threading, decorate, finish

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Evaluate Vocabulary	Evaluate, finished product, quality, improve	Evaluate, finished product, quality, improve	Evaluate, finished product, quality, improve
Technical Knowledge Vocabulary	Mechanism, moving parts, buggy/carriage, vehicle, wheels, axles, axel holder, chassis, body, sawing	Protein, fruit and vegetables, carbohydrates, dairy, oil and spreads, nutrition, hygiene, healthy, slicing, cutting, peeling, grate, fold, roll, balanced diet, bridge grip, claw grip	Threading, needle, thread, fastening, joining, identical, shapes
Quality texts	See Inside – How Things Work, Conrad Mason	Sam's Sandwich. David Pelham	
Enrichment activities (e.g. visits/ visitors into schools)	York Railway Museum	Fun Filled Food Journey - LA	Puppet Show – Lee Threadgold?
National Curriculum	Design • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria Technical knowledge • build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	Design • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate • evaluate their ideas and products against design criteria Knowledge • use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from.	Design • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make • select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria

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Curriculum Plans

Lower KS2	**Autumn Term** Mechanisms	**Spring Term** Cooking & Nutrition	**Summer Term** Structures & Computer-aided Design
Prior Knowledge (Retrieval)	**Year 1/Year 2** Talk about simple mechanisms they have made before. Y2 – wheeled vehicle **Design** • Identify the function and purpose of a mechanism and how it works. (How did their mechanism work? Boat, wheeled vehicle) • Identify the importance of mock ups and why they important to the design process. (How did they know their design would work?) **Make**	**Year 1/ Year 2** Talk about fruit salad that they made in Y1 and vegetable wrap that they made in Y2 **Design** • Identify the purpose of their vegetable wrap and fruit salad (How did you make this healthy and who was in for?) **Make** • Identify that a plan is needed before a product is made. (What do they need to prepare prior to making their product- ingredients, equipment and hygiene)	**Year 1** Talk about simple structures they made in Y1- Percy's House **Design** • Identify a purpose for their structure. (What was their structure and for what purpose?) • Identify that mock ups are part of the design process and why (why is it important to make a mock up?) **Make** • Identify a plan for the making process. (Why do you need to know what to do next?)

	• Identify that a plan is needed before a product is made. (What did they need to do with all their ideas before they begin to make a mechanism?) • Explain choices as to why tools were selected (What tools were used and why? Saws, bench hooks and scissors.) • Give reasons for measuring and marking was needed to make a wheeled vehicle. (When did you need to measure your materials and why?) • Give examples of finishing techniques used for their products- (How did you make your wheeled vehicle look better?) • Give examples of how you assembled materials. (How did you join materials?) **Evaluate** • Identify why it is important to make improvements to their products. **Technical Knowledge** • Check pupils understanding on the terms- mechanism, wheels, axels, levers, sliders.	• Explain choices for ingredients selected (What ingredients were used and why?) • Give examples of finishing techniques used for their products- (How did they make their wrap look better?) **Technical knowledge** • Describe that all food comes from plants and animals. (Which foods are farmed, grown elsewhere or caught?) • Name and sort foods into the 5 groups of the Eatwell Plate (fruits and vegetables, carbohydrates, protein, dairy and other alternatives, oils and spreads.) Can they sort selected foods into the 5 groups?	• Explain choices as to why tools were selected (paper, card, scissor) What equipment and tools did you use and why? • Give examples of finishing techniques used for their products- (How did you make your house for Percy look better?) • Give reasons why measuring and marking was needed to make Percy's House (When did you need to measure your materials and why?), levers **Evaluate** • Explain their understanding of strong freestanding structures (How would they strengthen their structure?) **Technical Knowledge** • Check pupils understanding on the term- nets, joins, levers, and sliders
Y3 **Key person/event** History of tree houses and designers/Eden Project	**D & T Element - Mechanisms** Pneumatics Systems **Knowledge and Skills to be developed:** **Designing** Create their own design criteria and use these to inform their ideas for their labelled design. Draw annotated sketches to communicate their design ideas. Model their ideas using prototypes. Make design decisions that take account of the availability of resources. **Making** Create a plan by ordering the main stages of making. Select from a wider range of tools and equipment explaining their choices. Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities. Measure, mark, cut and shape a range of materials and components. Assemble, join and combine materials with some accuracy. **Evaluating**	**D & T Element – Cooking & Nutrition** Perfect Pizza Knowledge and Skills to be developed: **Designing** Create their own design criteria and use these to inform their ideas for their labelled design. Draw annotated sketches to communicate their design ideas. Make design decisions that take account of the availability of resources. **Making** Create a plan by ordering the main stages of making Select from a range of tools and equipment explaining their choices- cheese grater, knives, spoon for cutting, slicing, grating, spreading. Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities. Measure, mark, cut and shape a range of materials and components. Assemble, join and combine materials with some accuracy. **Evaluating**	**D & T Element – Structures & Computer-aided design** Mini Treehouses Knowledge and Skills to be developed: **Designing** Create their own design criteria and use these to inform their ideas for their labelled design. Draw annotated sketches to communicate their design ideas. Model their ideas using prototypes. Make design decisions that take account of the availability of resources. **Making** Create a plan by ordering the main stages of making. Select from a wider range of tools and equipment explaining their choices. Marking, scoring, cutting. Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities. Measure, mark, cut and shape a range of materials and components. Assemble, join and combine materials with some accuracy. Apply a range of finishing techniques, including those from art and design and ICT (CAD), with some accuracy.

	Investigate and analyse a range of existing products. Use their design criteria to evaluate their completed products. Name and describe some inventors and how their inventions have shaped the world. Identify why it is important to make improvements to their products. **Technical Knowledge** Describe how mechanical systems create movement. Use mechanical systems in their products.	Investigate and analyse a range of existing products. Use their design criteria to evaluate their completed products. **Technical Knowledge** Use the correct technical vocabulary for the projects they are undertaking- peeling, cutting, slicing, grating, contamination, hygiene **Cooking and Nutrition** Describe that all food comes from plants and animals. Identify that food is grown, reared and caught in the UK, Europe and the wider world. 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 with a heat source. Use a range of techniques such as chopping, slicing, grating, mixing, and spreading.	**Evaluating** Investigate and analyse a range of existing products. Use their design criteria to evaluate their completed products. Name and describe some inventors and how their inventions have shaped the world. For example, Eden project or Nelson Treehouses website **Technical Knowledge** Use the correct technical vocabulary for the projects they are undertaking. Geometric shapes Build freestanding structures applying knowledge of how to make the structure stronger, stiffer and more stable.
Future learning	**Moveable toys (Y5)** • Use annotated sketches, cross sectional drawings and explodes diagrams to show their designs. • Make appropriate lists of resources that they will use, such as glue-guns, card, scissors, cams and dowelling rods. • Reinforce and strengthen a 3D framework. • Use technical vocabulary, such as weaker, stronger, structures, reinforce, movements, mechanism, rotation and comparing.	**Savoury scones (Y4)** • To make a savoury scone- understanding the vocabulary hygiene and adapt. • Use equipment such as knives, spoons, weighing scales and rolling pin. • Measuring out ingredients and shaping their scones. • Considering the views of others when evaluating.	**Minotaur maze (Y4)** • Children will design, make and evaluate a minotaur maze. • Learn about Daedalus- the inventor of the labyrinth (minotaur maze) • Use tools such as glue guns, hammers, nails and saws to strengthen a structure. • Use technical vocabulary such as frame, structure and adapting.
Designing Vocabulary	comparison, benefits, pneumatic system, key features, labelling, appeal, create, construct, syringes, suggesting, benefits, annotate, prototype	Slice of, labelling, target audience, appearance, benefits, recipe, nutrition, appeal, health benefits, hygienically, ingredients, food growth, taste, sweet, sour, hot, spicy, smell, preference, greasy, moist, cook, fresh, savoury, reared, caught, grown, techniques, utensils	Target audience, purpose, benefit, properties, frame structure, nets, frame, appeal, labelling, exploded diagrams, key features.
Making Vocabulary	Modification, model, key features, syringe, pneumatic system, constructing, motion, assemble, secure	Texture, peeling, cutting, slicing, grating, mixing, spreading, nutrition, ingredients, hygienically, recipe, contamination, names of equipment, utensils, techniques,	Construction, structure, secure, nets, frame, frame structure, reinforcing, strengthening, beam, strength, secure, stability, cutting, folding, tie, joining, strength, stages

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Curriculum Plans

Evaluating Vocabulary	Review, justify, opinion, constructive criticism	Evaluation, taste, sensory evaluation, texture, views, contructive criticism, justifying opinions, attraction	Comparing, effective, suggesting, review, views, benefits, modification, review, justify, opinion, constructive criticism, peer assessment
Technical Knowledge Vocabulary	Pneumatic system	Hygienically, recipe, contamination,	climate, seasonal, geometric shapes
Quality texts	• Pnuematic Monster Instructions text • The Way Things Work Now: A Visual Guide to the World of Machines - David Macaulay	• Iguana Boy Saves the World With a Triple Cheese Pizza - James Bishop • Pizza!: An Interactive Recipe Book- Cook In A Book - Lotta Nieminen	• The ?-Storey Treehouse - Andy Griffiths (various) • BG Bird Builds a Treehouse - Nada Serafimovic • Up In the Leaves - Shira Boss
Enrichment activties (e.g. visits/ visitors)		Visit to ASK to make pizzas.	
National Curriculum	Design: • 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, pattern pieces and computer-aided design Make • select from and use a wider range of tools and equipment to perform practical tasks accurately • select from and use a wider range of materials and components to their functional properties and aesthetic qualities Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge	Design • 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, Make • select from and use a wider range of tools and equipment to perform practical tasks accurately • select from and use a wider range of materials and components, including ingredients, according to their functional properties and aesthetic qualities Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge	Design • 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, pattern pieces and computer-aided design Make • 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 Evaluate • 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 and individuals in design and technology have helped shape the world

	• apply their understanding of how to strengthen, stiffen and reinforce more complex structures	• understand and use mechanical systems in their products apply their understanding of computing to program, monitor and control their products. Food and Nutrition • understand and apply the principles of a healthy and varied diet • prepare and ook 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	Technical knowledge • 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.

Lower KS2	**Autumn Term** Textiles and electricity	**Spring Term** Cooking and Nutrition	**Summer Term** Structures and Programming
Prior Knowledge (Retrieval)	**Year 2-Talk about making a hand puppet in Y2** • Identify the function and purpose of their hand puppet. (How did their hand puppet and who was it for?) • Identify the importance of mock ups and why they are important to the design process (How did they know their design would work?) • Identify steps needed to make their puppet. (What steps did you take to make your puppet?) • Explain choices as to why tools were selected (scissors, needles and threads) (What tools were used and why?) • Give reasons for cutting and shaping materials (When did you need to cut and shape materials and why?) • Give examples of how you assembled and joined (How did you join materials?) running stitch. • Give examples of techniques learnt (threading a needle and thread, tying a knot and running stitch.) • Identify why it is important to make adjustments and improvements to their products (Why was it important for them to make adjustments and improvements for their puppet?)	**Year 3- Talk about making a pizza and the vegetable wrap** • Identify the purpose of their pizza (How did they make it healthy and who was it for?) • Talk about how design decisions can be affected because of availability of resources. (Were they able to purchase all the ingredients that they planned for? How might someone be affected be limited availability of resources?) • Identify the main stages of the plan that are needed before a product is made (What do they need to prepare prior to making their product? Ingredients, equipment and hygiene) • Explain choices as to why tools were selected (cheese grater, knives, spoon for cutting, slicing, grating, spreading.) (What tools were used and why?) • Check pupils understanding on the terms-. peeling, cutting, slicing, grating, contamination • Identify why it is important to make improvements to their products.	**Year 3- Talk about building a structure for the treehouse** • Identify a purpose for their structure (what was their structure and for what purpose?) • Identify that prototype are part of the design process and why? (Why is it important to make a prototype?) • Identify the main stages of the plan that are needed before a product is made (What do they need to prepare prior to making their product? Resources, equipment) • Explain choices as to why tools were selected (saws, rulers, glue guns, scissors.) (What tools were used for and why?) • Explain why they used a range of materials according to their functional properties and aesthetic qualities. (Why did you use wood to make your tree house?) • Explain how they joined and combined materials with accuracy. (Why did you ensure your tree house was made accuracy?) • Give examples of finishing techniques used for their products- (How did you make your wheeled vehicle look better?) • Explain how they used CAD to make their tree house. (How did you use CAD to make your tree house?)

			• Talk about inventions that have shapes the world, for example the Eden project and Nelson Treehouses website • Check pupils understanding on the terms- Geometric shapes Where did they need use geometric shapes in the designing of their treehouse and why? • Identify why it is important to make improvements to their products.
Y4 **Key person/event** Daedalus and the invention of the Labyrinth (Minotaur Maze)	**D & T Element – Textiles and Electricity** Light up Christmas stockings Designing Generate realistic ideas focusing on the needs of the user. Draw annotated sketches and cross-sectional drawings to communicate their design ideas. Model their ideas using prototypes and pattern pieces. Make design decisions that take account of the availability of resources. **Making** Create a plan by ordering the main stages of making. Select and explain their choice of tools and equipment in relation to the skills and techniques they will be using- needles, scissors, threads. Select and explain their choice of materials and components according to functional properties and aesthetic qualities. Measure, mark, cut and shape a range of materials and components- fabric and thread. Assemble, join and combine materials with some accuracy. Threading a needle and tying a knot, blanket stitch and overcast stitch. Apply a range of finishing techniques, including those from art and design, with some accuracy. **Evaluating** Investigate and analyse a range of existing products. Use their design criteria to evaluate their completed products. Consider the views of others, including intended users, to improve their work. **Technical Knowledge** Know how a simple electrical circuit and components can be used to create functional products and know electrical systems have an input and a process. Reinforce and strengthen a 3D framework.	**D & T Element – Cooking & Nutrition** Healthy Scones Designing Generate realistic ideas focusing on the needs of the user. Draw annotated sketches and cross-sectional drawings to communicate their design ideas. Make design decisions that take account of the availability of resources. Making Create a plan by ordering the main stages of making. Select and explain their choice of tools and equipment in relation to the skills and techniques they will be using weighing scales, knives, spoons, rolling pin. Select and explain their choice of materials and components according to functional properties and aesthetic qualities. Measure, mark, cut and shape a range of materials and components- measuring out ingredients, shaping scones.. Apply a range of finishing techniques, including those from art and design, with some accuracy. Evaluating Investigate and analyse a range of existing products. Use their design criteria to evaluate their completed products. Consider the views of others, including intended users, to improve their work. Technical Knowledge Know the correct technical vocabulary for the products they are undertaking- hygiene, adapting **Cooking and Nutrition** Describe that all food comes from plants and animals. Identify that food is grown, reared and caught in the UK, Europe and the wider world.	**D & T Element – Structures & Programming** Minotaur mazes and control a programmable toy around a maze Designing Generate realistic ideas focusing on the needs of the user. Draw annotated sketches and cross-sectional drawings to communicate their design ideas. Model their ideas using prototypes. Make design decisions that take account of the availability of resources. **Making** Create a plan by ordering the main stages of making. Select and explain their choice of tools and equipment in relation to the skills and techniques they will be using-saws, scissors, glue guns Select and explain their choice of materials and components according to functional properties and aesthetic qualities. Measure, mark, cut and shape a range of materials and components- wood, cardboard Assemble, join and combine materials with some accuracy. Apply a range of finishing techniques, including those from art and design, with some accuracy. Evaluating Investigate and analyse a range of existing products. Use their design criteria to evaluate their completed products. 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. for example, Y4- Daedalus – inventor of the labyrinth (minotaur maze) Technical Knowledge

		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 savoury scones safely and hygienically. Link to PSHE (My healthy lifestyle). Evaluating – investigating existing products (different scones) - making it healthier	Reinforce and strengthen a 3D framework., glue guns, hammers and nails, saws. Know the correct technical vocabulary for the product they are undertaking, frame, structure and adapting, STRUCTURE (minotaur maze) Make base out of thick card base. Hammer and nail doweling to make an edge/ border Glue gun to the cardboard base Glue gun minotaur maze together
Future learning	**Make Do and Mend (Y6)** • Make designs of a WW2 item, taking account of constraints such as time, resources and cost – linking to that of this time period too. • Develop knowledge of new stitches - zig zag stitch, hidden stitches and visible stitch (overstitch or blanket stitch), fastenings and learning to secure their last stitch. • Develop the skill of applique	**Savoury biscuits (Y5)** • Children will use a computer to design prototypes rather than on paper. • Assemble and join to create a gift box fit for purpose for the savoury biscuit. • Vocabulary – 'healthier option' and 'nutritional' – what do they mean? • Identify that food is grown, reared and caught in the UK, **Europe and the wider world.** • Learn how food is **processed** into ingredients that can be eaten or used in cooking.	**Bridges (Y5)** • Children will use a computer to design prototypes rather than on paper, as well as researching bridges and their structures to find out about strength. • Accurately create the finishing touches of the bridge actually moving. • Learn about a famous bridge inventor. • Learn and be able to use the vocabulary: weaker, stronger structures, reinforce, compression, tension, shaft, abutments
Design Vocabulary	Annotate, sketch, communicate, prototype, availability, target audience, effective, ineffective, characteristics, findings, design criteria, labels, captions, diagrams, original design, investigate, desired effect, design criteria,, purpose	Target audience/user, comparing, products, town, county, North Yorkshire, taste testing. inspiration, desired effects, characteristics, Effective, ineffective, budget, market research, informs, findings, design criteria, personalising, label, captions, diagram, articulating, taste testing, products, original design, purpose, taste, texture, flavour.	Annotate, sketch, communicate, prototype, availability, target audience, effective, ineffective, characteristics, findings, design criteria, labels, captions, diagrams, original design, investigate
Make Vocabulary	Create, stages, techniques, components, functionality, qualities, finish	budget, increase, decrease, finish	Create, stages, techniques, components, functionality, qualities
Evaluate Vocabulary	Analyse, evaluate, design criteria, intended users, adapt, finish modification	environmental impact texture, adapting, evaluating, finish modification	Analyse, evaluate, design criteria, intended users, adapt, finish modification
Technical Knowledge Vocabulary	Functional product, reinforce, strengthen, process, framework, structure, adapt, effective, ineffective, blanket stitch, overstitch, reinforce	workmanship, effective, ineffective, nutrients. increase, decrease measuring, grams, g, degrees, heat, food groups (carbohydrates, protein, fats, dairy, oils and spreads) Kneading, baking, chopping, slicing, mixing	Functional product, reinforce, strengthen, process, framework, structure, adapt, effective, ineffective,
Quality texts	Twas the night before Xmas – the uses of a Christmas stocking.	The History of Scones – online text (freshways) A selection of recipes (online and from cooking books – bero/ Mary Berry/ BBC good food)	Greek mythology (a series of Greek Myths – Theseus and the Minotaur) Theseus and the Minotaur – picture book to support

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Curriculum Plans

Enrichment activities (e.g. visitors/ visits)		Fun filled food Journey – visitor into school workshop	Visitor into school – History links HISTORY SQUAD Ancient Greeks
National Curriculum	Design • 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, pattern pieces and computer-aided design Make • 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, textiles according to their functional properties and aesthetic qualities Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge 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].	Design • 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, Make • 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 and ingredients, according to their functional properties and aesthetic qualities Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • apply their understanding of computing to program, monitor and control their products. Food and Nutrition • 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	Design • 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, pattern pieces and computer-aided design Make • 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 Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • 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.

		• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	

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Curriculum Plans

Upper KS2	**Autumn Term** Bridges Structures	**Spring Term** Savoury Biscuit Cooking and Nutrition	**Summer Term** Moving toys Mechanisms
Prior Knowledge (Retrieval)	Y4-Talk about making a minotaur maze • Identify an annotated sketch and cross-sectional drawing and explain their importance in designing their savoury scone. (Which is the annotated sketch and the cross-section diagram? Why are these diagrams important?) • Talk about how design decisions can be affected because of the availability of resources (were they able to purchase all the ingredients that they planned for?) • Explain choices as to why tools were selected (saws, scissors, glue guns) What tools were used and why? • Give an example of when they measured, marked, cut and shaped – minotaur maze (measuring dowelling, card.) (Why was it important to accurately measure the resources for your maze?) • Give examples of how they joined materials. (How did you join materials and what was your reason for this choice?) • Check pupils understanding of the terms- frame, structure, adapting, How did you ensure your framework was accurately made? How did you need to adapt your framework? • Talk about inventions that have shapes the world, for example Daedelus inventor of the labyrinth (minotaur maze.) (What do you know about Daedelus and his influence on mazes?) • Talk about how they can strengthen and reinforce a framework. (How can you strengthen a framework?) glue guns, nails and saws. • Talk about how they can use the views of others to improve their work and how they can support others to improve their work (How can someone else help you to improve your work? How can you support someone else to make improvements?) • Give an example of how they used their design criteria to evaluate. (How did your design criteria support your evaluation?)	Y4- Talk about making a healthy scone • Identify an annotated sketch and cross-sectional drawing and explain their importance in designing their savoury scone. (Which is the annotated sketch and the cross-section diagram? Why are these diagrams important?) • Talk about how design decisions can be affected because of the availability of resources (were they able to purchase all the ingredients that they planned for?) • Identify the main stages of the plan that are needed before a product is made (What did they need to prepare prior to making their scone? Ingredients, equipment and hygiene) • Explain choices as to why tools were selected (weighing scales, knives, spoons, rolling pin) What tools were used and why? • Give an example of when they measured, marked, cut and shaped - healthy scone (measuring out ingredients, shaping scones.) (Why was it important to accurately measure the ingredients for your scone?) • Talk about a range of existing products and why they needed to be explored. (Why did they explore other scones before they designed their own?) • Check pupils understanding of the terms- hygiene, adapting? How did you ensure good hygiene and safety whilst making your scones? How did you adapt your scone for your user? • Name and sort foods into the 5 groups of the Eatwell Plate (fruits, vegetables, carbohydrates, protein, dairy and other alternatives and oils and spread. (Can they sort selected foods into the 5 groups?) • Describe that all food comes from plants and animals. (Which foods are farmed, grown elsewhere or caught in the Uk, Europe and the wider world?)	Y3- Talk about making a pneumatic system • Create a design criteria and identify a user and a purpose for their product. (Who is your product for and how does it work?) • Talk about how an annotated sketch is useful for a designer. (What should an annotated sketch of a product include?) Cross sectional has also been covered in Y4. Can the children identify this? • Identify the importance of using prototypes and why they are important to the design process (How did they know their pneumatic would work?) • Talk about how design decisions can be affected because of the availability of resources (How did you make prepare for having resources?) • Give examples of why making a plan of the main stages is important before the making process (What did they need to prepare prior to making their pneumatic system? Box preparation, making holes, cutting, measuring) • Give an example of when they measured, marked, cut resources for their pneumatic (Why was it important to accurately measure resources for the system?) • Consider why you used materials for your pneumatic system. (Why did you use the materials you used for your pneumatic system?) • Talk about a range of existing products and why they needed to be explored. (Why did they explore other pneumatic systems before they designed their own?) • Talk about why they need to make improvements to their pneumatic system. (How did you make an improvement to your pneumatic system and why was this important?) • Check pupils understanding of the terms of how mechanical systems create movement.

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Curriculum Plans

Y5 **Key person/event** Isambad Kingdom Brunel (bridge engineer)	**D & T Element – Structures** Build different bridges and the structures which support them Knowledge and Skills to be developed: Designing 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 computer-aided design. Make designs decisions, taking account of constraints such as time, resources and cost. Making Formulate step by step plans as a guide to making. Produce appropriate lists of tools, equipment, materials and components that they need- sello-tape, masking tape, card, scissors. Accurately measure, mark out, cut and shape materials and components-rulers, and measuring tapes Accurately assemble, join and combine materials and components. Accurately apply a range of finishing techniques, including those from art and design. Moveable toy and bridges. 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. for example,Y5-Isambard Kingdom Brunel (bridge engineer) Technical Knowledge Reinforce and strengthen a 3D framework. Bridge Know the correct technical vocabulary for the products they are undertaking, weaker, stronger structures, reinforce, compression, tension, abutments	**D & T Element – Cooking & Nutrition** Savoury biscuits- scope to link with 3D Modelling (Computing) and Mathematics (Volume) Knowledge and Skills to be developed: Designing 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 computer-aided design. Make designs, taking account of constraints such as time, resources and cost. Making Formulate step by step plans as a guide to making. Produce appropriate lists of tools, equipment, materials and components that they need-wooden mixing spoons, knives, weighing scales Accurately measure, mark out, cut and shape materials and components, weighing out ingredients, timings. Accurately assemble, join and combine materials and components to make their gift box 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. Technical Knowledge Reinforce and strengthen a 3D framework (gift box) Know the correct technical vocabulary for the products they are undertaking, healthier option, nutritional. 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	**D & T Element – Mechanisms** Moving Victorian toy Knowledge and Skills to be developed: Designing 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. Make designs, taking account of constraints such as time, resources and cost. Making Formulate step by step plans as a guide to making. Produce appropriate lists of tools, equipment, materials and components that they need- glue guns, card, scissors, cams, dowelling rods Accurately measure, mark out, cut and shape materials and components-rulers Accurately assemble, join and combine materials and components. Accurately apply a range of finishing techniques, including those from art and design- Moveable toy. 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. Technical Knowledge Reinforce and strengthen a 3D framework- Moveable toy Know the correct technical vocabulary for the products they are undertaking, weaker, stronger structures, reinforce, movement, mechanism, rotation, comparing, shaft

		Prepare and cook savoury biscuits safely and hygienically. Use a range of techniques such as … peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	
Future learning	**Breakfast bar (Y6)** • Understanding technical vocabulary -Fairtrade, sustainable, sustainability balanced diet • Considering constraints such as cost. • Using finishing techniques from art and design. • Using a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. • Producing appropriate lists for resources.	**Making a structure for a nightlight (electrical systems/** Programming (making a structure for the night light) • Producing appropriate lists for resources • Assemble, join and combine materials for a structure to hold programming equipment. • Learn about famous engineers that shaped the world, such as Alan Turing, Charles Babbage, Ada Lovelace •	**N/A**
Design Vocabulary	research, market, annotated sketches, cross sectional drawings, exploded diagrams, constraints, time, resources, cost	cross sectional drawings, exploded diagrams, annotated sketches	mixture, structure, mechanism, cams, shape, accurately, cross sectional drawings, exploded diagrams, annotated sketches
Make Vocabulary	step by step, appropriate, tools, equipment wooden mixing spoons, knives, weighing scales, grams, accurate, measure	step by step, appropriate, tools, equipment sello-tape, masking tape, card, scissors, ruler, ruler, centimetre, length, assemble, cut, join, finishing techniques, prototype	design brief, focus, cams, tension, folds, produce movement, layers, spacers, mechanical parts, aesthetically pleasing
Evaluate Vocabulary	Investigate, analyse, existing, products, improve, design, specification, original, intended user, adapt, weigh, loads.	Investigate, analyse, existing, products, improve, design, specification, original, intended user, adapt, Isambad Kingdom Brunel, comparing	identifying, movement, desired effect, modify, alter, products
Technical Knowledge Vocabulary	Processed, reared, caught, grown, seasonality, Eatwell Plate, fruit and vegetables, carbohydrates, protein, dairy and other alternatives, oil and spreads	truss, beam, abutments, triangulation, tension, gravity, pressure, fit for purpose, strengthen, downward, upward force, compression, triangle, Lattice, Warren, Pratt, pillars, Isamabad Kingdom Brunel, structure, reinforce, 3D framework, weaker, stronger	motion, mechanism, control movement, shaft
Quality texts	• A range of recipes from Be-Ro cookbook.	• How Do Bridges Not Fall Down? A Book about Architecture and Engineering • The Little Giant- Isamabad Kingdom Brunel Story	• Toys in the Past Adjunct Lecturer Elizabeth Moore
Enrichment activities (e.g. visitors/ visits)		A walk along the cinder track to see arch and beam bridges,	

Gladstone Road Primary School Design Technology

Curriculum Plans

National Curriculum	Design • 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, pattern pieces and computer-aided design Make • 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, textiles according to their functional properties and aesthetic qualities Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge • 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] Food and Nutrition • understand and apply the principles of a healthy and varied diet • prepare and ook 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	Design • 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, pattern pieces and computer-aided design Make • 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, textiles according to their functional properties and aesthetic qualities Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge • 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]	Design • 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, pattern pieces and computer-aided design Make • 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, textiles according to their functional properties and aesthetic qualities Evaluate • 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 and individuals in design and technology have helped shape the world Technical knowledge • 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]

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Curriculum Plans

Upper KS2	**Autumn Term** Textiles – Make Do and Mend	**Spring Term** **Food and Nutrition**	**Summer Term** Electrical systems/programming and control
Prior Knowledge (Retrieval)	Y2- Talk about making a hand puppet Y4- Talk about sewing a Christmas stocking **Design** • 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? **Making** • 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. **Evaluating** • Explain why it is important to evaluate pre-existing products. • Explain why it is important to evaluate their own products. **Technical Knowledge** • Identify types of stitches used previously.	Y5- Talk about making savoury biscuits **Design** • Describe why the design process is important. • Identify the different stages of the design process. **Making** • 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. **Evaluating** • Explain why it is important to evaluate pre-existing products. • Explain why it is important to evaluate their own products. **Technical Knowledge** • 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.	Y3-Talk about Computer Aided Design for treehouses and how they used simple electrical circuits in their Christmas stockings. **Design** • 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? **Making** • 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. **Evaluating** • Explain why it is important to evaluate pre-existing products. • Explain why it is important to evaluate their own products. **Technical Knowledge** • 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.	**D & T Element – Textiles** Repurposing materials to create a new product 'Make Do and Mend' linked to WW2 <u>Knowledge and Skills to be developed:</u> <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. <u>Making</u>	**D & T Element – Food** <u>Design and make a breakfast bar using a range of ingredients found in the rainforest/fair-trade foods.</u> <u>Knowledge and Skills to be developed:</u> <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. <u>Making</u> Formulate step by step plans as a guide to making.	**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> <u>Knowledge and Skills to be developed:</u> <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. <u>Making</u>

	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 <u>Evaluating</u> 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. <u>Technical Knowledge</u> Know the correct technical vocabulary for the products they are undertaking, fabric, blanket stitch, technique, regularity of stitches	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. <u>Evaluating</u> 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. <u>Technical Knowledge</u> Know the correct technical vocabulary for the products they are undertaking-Fairtrade, sustainable, sustainability balanced diet <u>Cooking and Nutrition</u> 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 onioProtein 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.	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. <u>Evaluating</u> 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) <u>Technical Knowledge</u> Know the correct technical vocabulary for the products they are undertaking-functioning circuit, code, snippet, sparkle, crumb, crumble board Reinforce and strengthen a 3D framework. Night light
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 , crumble, crumb, snippet, sparkle
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, Ava Lovelace, computer programming
Some Vocabulary	Applique, hidden stitch, visible stitch, aesthetics	completed product, original design, modifications, reliability, aesthetics, incorporate adapting	key components, functioning circuit, parallel circuit

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Curriculum Plans

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	**Design** • 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 **Make** • 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 **Evaluate** • 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 **Technical knowledge** • Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	**Design** • 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, **Make** • 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 **Evaluate** • 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 **Cooking and Nutrition** • 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.	**Design** • 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 **Make** • 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 **Evaluate** • 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 **Technical knowledge** • 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.