Design and Technology - Concepts Progression Map

Design & Technology at St Thomas's Primary School

Intent	Design and Technology is an inspiring, innovative and practical subject. Design and Technology encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team. At St. Thomas' CE Primary School, we encourage children to use their creativity and imagination, to design and make products that solve real life problems within a variety of contexts, considering their own and others' needs, wants and values. We aim to link work to other subject areas, and draw on skills from disciplines, such as mathematics, science, engineering, computing and art. DT aims to encourage children to take risks, to develop new innovative designs and to be reflective learners by giving them opportunities to evaluate their own work, as well as the design and work of others within school and the wider world. Children are given time to test their own products and plan for making adjustments which enables them to change their designs and improve their end product.
Implement	Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to engage in an iterative process of designing and making. The children design and create products that consider function and purpose and which are relevant to a range of sectors (for example, the home, school, leisure, culture, enterprise, industry and the wider environment). Key skills and key knowledge for DT have been mapped across the school to ensure progression across year groups. The context for the children's work in Design and Technology is also well considered and provides deeper learning opportunities based on learning in other areas of the curriculum.
Impact	By the time children leave our school they will have: • An excellent attitude to learning and independent working. • The ability to use time efficiently and work constructively and productively with others. • The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs. • The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely. • A thorough knowledge of which tools, equipment and materials to use to make their products. • The ability to apply mathematical knowledge and skills accurately. • The ability to manage risks exceptionally well to manufacture products safely and hygienically. • A passion for the subject.
Context	**"I come that they might have life and life in all its fullness." The Gospel of John 10 v 10** We are a school of faith and as Christians, believe that God created the world. As designers, we look at God's creations and move forward to be creators ourselves. Creation is an essential aspect of life because it involves doing, living, and thinking. Designing and making gives us the opportunity to share our thoughts, visions, ideas and to express ourselves. 'Let your light shine' Matthew 5:16

Learning and Growing in the Sight of God

Learning	Growing	Sight of God
		
To understand the value of perseverance, the children hold on to their faith and focus. We recognise that we may make marvellous mistakes which will support us in the iterative process of designing and making to improve our final product. We reflect on our own learning and the learning of others.	Being a designer motivates us to express our ideas. Working collaboratively on projects with others can help the children feel inspired and give them pleasure and happiness. It can allow the children to grow together.	Our church is at the centre of our community and our school. We link our Christian Values throughout our curriculum and work and learn together in the sight of God. Being a designer can be an expression of our Christian faith in that we can work with and respect our God-Given Gifts.

Design and Technology - Concepts Progression Map

Substantive Knowledge

Substantive knowledge refers to the residual knowledge that children should take away from the unit after it has been taught.
At St Thomas's, we study five areas of Design & Technology in accordance with The National Curriculum and using guidance from the Design And Technology Association (DATA). These areas are revisited and built upon in subsequent years to aid progression and retention in both knowledge and skills in each of the disciplines.
The areas of study are; Structures, Mechanisms, Food & Nutrition, Textiles and Electrical Systems.

Disciplinary

Disciplinary knowledge in Design & Technology is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum.
Disciplinary knowledge includes all the skills that children will need to develop over time in their DT lessons. It is taught by giving children the opportunity to explore existing products and evaluating these, before following a design brief to design and make their own improved product.
It is based on the knowledge of four key elements of the process of design: Design, Make, Evaluate and Technical Knowledge. All of these elements are taught in all year groups.

Design 	Know how to design a product that is purposeful, functional and appealing to a specific group.
Make 	Know how to safely and carefully cut, join and finish a range of materials, ranging from paper to wood.
Evaluate 	Know how to investigate, evaluate and analyse a range of products and their own designs based on specific criteria.
Technical knowledge 	Know how to apply their knowledge of materials to meet the criteria above in the design, make and evaluate stages. Use technical vocabulary with confidence and accuracy.

Design and Technology - Concepts Progression Map

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	All About Me	Emily Brown and Father Christmas	Polly Parrot Picks a Pirate	Dear Dinosaur	The Trouble with Dragons	Farmer Cleggs Night Out
Reception	All About Me	Emily Brown and Father Christmas	Polly Parrot Picks a Pirate	Dear Dinosaur	The Trouble with Dragons	Farmer Cleggs Night Out
Year 1		Food & Nutrition Fruit Kebabs		Mechanism Moving Pictures		Mechanism Wheels & Axels
Year 2		Textiles		Structures		Food & Nutrition
Year 3		Mechanisms Pop-up Cards		Food & Nutrition Rainbow Wraps		Structures Famous Buildings
Year 4		Food & Nutrition Greek Salads		Electrical Systems Lamps		Textiles Explorer Bags
Year 5		Mechanisms Cam Toys		Food & Nutrition Soup		Structures Playground Shelters
Year 6		Textiles Keep-sake Cushions		Food & Nutrition Bake Off		Electrical Systems

Design and Technology - Concepts Progression Map

Nursery	Autumn	Spring	Summer
	All About Me Emily Brown and Father Christmas	Polly Pirate Picks a Pirate Dear Dinosaur	The Trouble with Dragons Farmer Cleggs Night Out
Enquiry Question	What makes Me me? How can we be helpful?	What makes a good friend? What does an explorer do?	How can we make the world a better place? What are our talents?
St Thomas' Life Question	How has God made me unique? How can we help others?	How can I be a good friend?	How can we look after creation? How can we use our talents to help others?
Substantive Knowledge *Technical Knowledge & Practical Skills.*	Make simple models. Explore different materials freely Join different materials and explore different textures	Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park Explore different materials freely, in order to develop their ideas about how to use them and what to make	Develop their own ideas and then decide which materials to use to express them
Key Vocabulary	Cut, stick, glue, scissors, paint, paper	Build, bricks, blocks pencils, crayons, felt pens,	Junk modelling, cardboard, cellotape string
Disciplinary Knowledge **Design** **Make** **Evaluate**	. **Playing and Exploring** Realise that their actions have an effect on the world, so they want to keep repeating them. Plan and think ahead about how they will explore or play with objects. Guide their own thinking and actions by talking ɒ themselves while playing. Make independent choices. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences that you bring totheir attention. **Active Learning** Participate in routines and begin to predict sequences because they know routines. Show goal-directed behaviour. Begin to correct their mistakes themselves. Keep on trying when things are difficult. **Creating and Thinking Critically** Take part in simple pretend play.	**Playing and Exploring** Realise that their actions have an effect on the world, so they want to keep repeating them. Plan and think ahead about how they will explore or play with objects. Guide their own thinking and actions by talking ɒ themselves while playing. Make independent choices. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences that you bring totheir attention. **Active Learning** Participate in routines and begin to predict sequences because they know routines. Show goal-directed behaviour. Begin to correct their mistakes themselves. Keep on trying when things are difficult. **Creating and Thinking Critically** Take part in simple pretend play.	**Playing and Exploring** Realise that their actions have an effect on the world, so they want to keep repeating them. Plan and think ahead about how they will explore or play with objects. Guide their own thinking and actions by talking ɒ themselves while playing. Make independent choices. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences that you bring totheir attention. **Active Learning** Participate in routines and begin to predict sequences because they know routines. Show goal-directed behaviour. Begin to correct their mistakes themselves. Keep on trying when things are difficult. **Creating and Thinking Critically** Take part in simple pretend play.

Design and Technology - Concepts Progression Map

	Sort materials. Review their progress as they try to achieve a goal and check how well they are doing. Solve real problems. Use pretend play to think beyond the 'here and now' and to understand another perspective. Know more, so feel confident about coming upwith their own ideas. Make more links betweenthose ideas. Concentrate on achieving something that's important to them. They are increasingly able to control their attention and ignore distractions.	Sort materials. Review their progress as they try to achieve a goal and check how well they are doing. Solve real problems. Use pretend play to think beyond the 'here and now' and to understand another perspective. Know more, so feel confident about coming upwith their own ideas. Make more links betweenthose ideas. Concentrate on achieving something that'simportant to them. They are increasingly able to control their attention and ignore distractions.	Sort materials. Review their progress as they try to achieve a goal and check how well they are doing. Solve real problems. Use pretend play to think beyond the 'here and now' and to understand another perspective. Know more, so feel confident about coming upwith their own ideas. Make more links betweenthose ideas. Concentrate on achieving something that'simportant to them. They are increasingly able to control their attention and ignore distractions.
Experiential Knowledge • Our Church /Our Community Visit / Place / Person	Parents bringing babies to Nursery Christmas performance Grandparents day	Walk to Outdoor Learning area at the Juniors	Parents sharing their talents with the class. Farm trip
Protected Characteristics	Age, Gender, Sex, Race, Religion, Belief		

Design and Technology - Concepts Progression Map

Reception	Autumn	Spring	Summer
	All About Me Emily Brown and Father Christmas	Polly Pirate Picks a Pirate Dear Dinosaur	The Trouble with Dragons Farmer Cleggs Night Out
Enquiry Question	What makes Me me? How can we be helpful?	What makes a good friend? What does an explorer do?	How can we make the world a better place? What are our talents?
St Thomas' Life Question	How has God made me unique? How can we help others?	How can I be a good friend?	How can we look after creation? How can we use our talents to help others?
Substantive Knowledge Technical Knowledge & Practical Skills.	Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.	Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills.	- 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;
Key Vocabulary	cut glue, scissors, glue stick, make, junk model, build, cardboard, paint	Fasten, join, cellotape, masking tape, hole punch, string	Design Finish, explain, change
Disciplinary Knowledge **Design** **Make** **Evaluate**	**Playing and Exploring** Realise that their actions have an effect on the world, so they want to keep repeating them. Plan and think ahead about how they will explore or play with objects. Guide their own thinking and actions by talking to themselves while playing. Make independent choices. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences that you bring totheir attention. **Active Learning** Participate in routines and begin to predict sequences because they know routines. Show goal-directed behaviour. Begin to correct their mistakes themselves. Keep on trying when things are difficult. **Creating and Thinking Critically** Take part in simple pretend play. Sort materials.	**Playing and Exploring** Realise that their actions have an effect on theworld, so they want to keep repeating them. Plan and think ahead about how they willexplore or play with objects. Guide their own thinking and actions by talking to themselves while playing. Make independent choices. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences that you bring totheir attention. **Active Learning**	**Playing and Exploring** Realise that their actions have an effect on the world, so they want to keep repeating them. Plan and think ahead about how they will explore or play with objects. Guide their own thinking and actions by talking to themselves while playing. Make independent choices. Bring their own interests and fascinations into early years settings. This helps them to develop their learning. Respond to new experiences that you bring totheir attention. **Active Learning** Participate in routines and begin to predict sequences because they know routines. Show goal-directed behaviour. Begin to correct their mistakes themselves. Keep on trying when things are difficult. **Creating and Thinking Critically** Take part in simple pretend play. Sort materials.

Design and Technology - Concepts Progression Map

	Review their progress as they try to achieve a goal and check how well they are doing. Solve real problems. Use pretend play to think beyond the 'here and now' and to understand another perspective. Know more, so feel confident about coming upwith their own ideas. Make more links betweenthose ideas. Concentrate on achieving something that's important to them. They are increasingly able to control their attention and ignore distractions.	Participate in routines and begin to predictsequences because they know routines. Show goal-directed behaviour. Begin to correct their mistakes themselves. Keep on trying when things are difficult. **<u>Creating and Thinking Critically</u>** Take part in simple pretend play. Sort materials. Review their progress as they try to achieve a goal and check how well they are doing. Solve real problems. Use pretend play to think beyond the 'here and now' and to understand another perspective. Know more, so feel confident about coming up with their own ideas. Make more links between those ideas. Concentrate on achieving something that'simportant to them. They are increasingly able to control their attention and ignore distractions.	Review their progress as they try to achieve a goal and check how well they are doing. Solve real problems. Use pretend play to think beyond the 'here and now' and to understand another perspective. Know more, so feel confident about coming upwith their own ideas. Make more links betweenthose ideas. Concentrate on achieving something that'simportant to them. They are increasingly able to control their attention and ignore distractions.
Experiential Knowledge • **Our Church /Our Community Visit / Place / Person**	Parents bringing babies to Nursery to talk about them Christmas Nativity Grandparents day	Walk to Outdoor Learning area at the Juniors	Parents sharing their talents with the class. Farm trip
Protected Characteristics	Age, Gender, Sex, Race, Religion, Race		

Design and Technology - Concepts Progression Map

Year 1	Autumn Food and Nutrition Fruit Kebabs	Spring Mechanism Moving Pictures	Summer Mechanism Wheels and Axles
Enquiry Question	Can you make a tasty snack for the reindeer?	What do you do if you get lost in the woods?	What will you travel on for your next exploration?
St Thomas' Life Question	What makes for a healthy snack?	Who will keep us safe?	What does it feel like to take risks?
Substantive Knowledge ***Technical Knowledge & Practical Skills.*** ***Mechanisms*** ***Food & Nutrition*** ***Structures*** ***Electrical Systems*** ***Textiles***	Know that food comes from plants or animals and that it is farmed or caught. Know how to prepare simple dishes safely and hygienically without a heat source. Develop a food vocabulary using taste, smell, texture and touch. Group familiar products e.g. fruit and vegetables. Wash, cut and slice a range of ingredients. Work safely and hygienically. Know that everyone should eat at least five portions of fruit and vegetables a day. Understand the need for a variety of food in the diet.	Understand what a mechanism is Explore different mechanisms Know the difference between a lever and a slider Explore different sliders Make a model using a simple construction kit to explore the workings of a lever Insert paper fasteners for card linkages. Create hinges. Fold, tear and cut paper and card. Cut a simple shape Cut slots Create a background for your slider Make a simple pivot for your moving picture	Cut along lines, straight and curved, with scissors. Use a hole punch. Make vehicles with construction kits which contain free running wheels. Distinguish between fixed and freely moving axles. Use a range of materials to create models with wheels and axles e.g. glue, tape, dowel and cotton reels. Attach wheels to a chassis using an axle.
Key Vocabulary	Names of fruit and vegetables Kebab, skewer, chop, peel, slice, diet, ingredients, Chopping board	Lever, pivot, slider, left, right, push, pull, up, down, forwards, backwards, in, out	vehicles, fixed axle, free axle, body, wheel, chassis, assembling, joining, finishing, assembling
Disciplinary Knowledge **Design** **Make** **Evaluate**	<u>Designing</u> <u>Understanding Contexts, users and purposes</u> Use simple design criteria State what their products are and how they will work <u>Generating, developing, modelling and communicating ideas.</u> Draw on their own experiences to generate ideas. Identify a target group for what they intend to design and make. Select pictures to help develop ideas. Suggest ideas and explain what they are going to do. Model their ideas in card and paper. Select materials from a limited range that will meet their design criteria <u>Planning</u> Follow verbal instructions.	<u>Designing</u> <u>Understanding Contexts, users and purposes</u> Use simple design criteria State what their products are and how they will work <u>Generating, developing, modelling and communicating ideas.</u> Draw on their own experiences to generate ideas. Identify a target group for what they intend to design and make. Select pictures to help develop ideas. Suggest ideas and explain what they are going to do. Model their ideas in card and paper. Select materials from a limited range that will meet their design criteria <u>Planning</u> Follow verbal instructions.	<u>Designing</u> <u>Understanding Contexts, users and purposes</u> Use simple design criteria State what their products are and how they will work <u>Generating, developing, modelling and communicating ideas.</u> Draw on their own experiences to generate ideas. Identify a target group for what they intend to design and make. Select pictures to help develop ideas. Suggest ideas and explain what they are going to do. Model their ideas in card and paper. Select materials from a limited range that will meet their design criteria <u>Planning</u> Follow verbal instructions.

Design and Technology - Concepts Progression Map

	Describe what they need to do next. Name the tools they are using. <u>Evaluating</u> <u>Own ideas and products</u> Talk about their designs as they develop Identify good and bad points. Talk about changes made during the making process. <u>Existing Products</u> Explore a range of books and existing products that use simple sliders and levers. Explore a range of free-standing structures in the school and local environment e.g. everyday products and buildings. Test and evaluate a range of fruit and vegetables. Explore: • Who products are for. • What products are for. • How they work and are used. • What materials they are made from. • What they like and dislike about them.	Describe what they need to do next. Name the tools they are using. <u>Evaluating</u> <u>Own ideas and products</u> Talk about their designs as they develop Identify good and bad points. Talk about changes made during the making process. <u>Existing Products</u> Explore a range of books and existing products that use simple sliders and levers. Explore a range of free-standing structures in the school and local environment e.g. everyday products and buildings. Test and evaluate a range of fruit and vegetables. Explore: • Who products are for. • What products are for. • How they work and are used. • What materials they are made from. • What they like and dislike about them.	Describe what they need to do next. Name the tools they are using. <u>Evaluating</u> <u>Own ideas and products</u> Talk about their designs as they develop Identify good and bad points. Talk about changes made during the making process. <u>Existing Products</u> Explore a range of books and existing products that use simple sliders and levers. Explore a range of free-standing structures in the school and local environment e.g. everyday products and buildings. Test and evaluate a range of fruit and vegetables. Explore: • Who products are for. • What products are for. • How they work and are used. • What materials they are made from. • What they like and dislike about them.
Experiential Knowledge • **Our Church /Our Community** **Visit / Place / Person**	Christmas celebrations		Airport Visit
Protected Characteristics	Religion, Belief		Race

Design and Technology - Concepts Progression Map

Year 2	Autumn Textiles Masai Necklace	Spring Structures Design a 3D Mao	Summer Food & Nutrition
Enquiry Question	How is fashion important to different cultures across the world?	What makes a structure more secure?	How to prepare a healthy meal?
St Thomas' Life Question	How do we support our community?	How has God created our world?	How can we share our food fairly in our community and around the world?
Substantive Knowledge ***Technical Knowledge & Practical Skills.*** ***Mechanisms*** ***Food & Nutrition*** ***Structures*** ***Electrical Systems*** ***Textiles***	Cut out shapes which have been created by drawing round a template onto the fabric. Join fabrics by using a running stitch, glue, staples and tape. Decorate fabric with buttons, beads, sequins, braids and ribbons. Colour fabrics using a range of techniques e.g. fabric paints, fabric crayons, printing and painting.	Join appropriately for different materials and situations e.g. glue and tape. Mark out materials to be cut using a template. Make structures more stable by giving them a wide base. Investigate strengthening sheet materials. Investigate joining temporary, fixed and moving materials. Select new and reclaimed materials and construction kits to build their structures. Choose and use appropriate finishing techniques.	Know that food comes from farm and animals and it is farmed or caught. know how to prepare simple dishes safely and hygienically without a heat source grate, squeeze and peel a range of ingredients measure and weigh food items- non statutory measures e.g. spoons & cups. understand the need for a variety of food in the diet.
Key Vocabulary	Traditional, clothing, necklace, string, penne pasta, string, joining, tying, knot, left handed, right handed, overhand knot	map, join, structure, 3D, template, base, L brace, flange join, slot join	Food, diet, hygiene, ingredients, grate, squeeze, peel, weigh, fruit
Disciplinary Knowledge **Design** **Make** **Evaluate**	<u>Designing</u> <u>Understanding Contexts, users and purposes</u> Use simple design criteria State what their products are, who and what they are for and how they will work <u>Generating, developing, modelling and communicating ideas.</u> Generate ideas using their own experiences and existing products. Identify a purpose for what they intend to design and make. Develop their design ideas through discussion, drawing and modelling and, where appropriate, computers. Discuss their work as it progresses. Explain which materials they are using. <u>Planning</u> Plan by suggesting what to do next.	<u>Designing</u> <u>Understanding Contexts, users and purposes</u> Use simple design criteria State what their products are, who and what they are for and how they will work <u>Generating, developing, modelling and communicating ideas.</u> Generate ideas using their own experiences and existing products. Identify a purpose for what they intend to design and make. Develop their design ideas through discussion, drawing and modelling and, where appropriate, computers. Discuss their work as it progresses. Explain which materials they are using. <u>Planning</u> Plan by suggesting what to do next.	<u>Designing</u> <u>Understanding Contexts, users and purposes</u> Use simple design criteria State what their products are, who and what they are for and how they will work <u>Generating, developing, modelling and communicating ideas.</u> Generate ideas using their own experiences and existing products. Identify a purpose for what they intend to design and make. Develop their design ideas through discussion, drawing and modelling and, where appropriate, computers. Discuss their work as it progresses. Explain which materials they are using. <u>Planning</u> Plan by suggesting what to do next.

Design and Technology - Concepts Progression Map

	Select from a range of tools and materials. Evaluating Own ideas and products Evaluate their products as they are developed. Identify strengths and possible changes they might make. Make simple judgements about their products and ideas against design criteria. Existing Products Explore a range of books and existing products that use simple sliders and levers. Explore a range of free-standing structures in the school and local environment e.g. everyday products and buildings. Test and evaluate a range of fruit and vegetables. Explore: • Who products are for. • What products are for. • How they work and are used. • What materials they are made from. • What they like and dislike about them.	Select from a range of tools and materials. Evaluating Own ideas and products Evaluate their products as they are developed. Identify strengths and possible changes they might make. Make simple judgements about their products and ideas against design criteria. Existing Products Explore a range of books and existing products that use simple sliders and levers. Explore a range of free-standing structures in the school and local environment e.g. everyday products and buildings. Test and evaluate a range of fruit and vegetables. Explore: • Who products are for. • What products are for. • How they work and are used. • What materials they are made from. • What they like and dislike about them.	Select from a range of tools and materials. Evaluating Own ideas and products Evaluate their products as they are developed. Identify strengths and possible changes they might make. Make simple judgements about their products and ideas against design criteria. Existing Products Explore a range of books and existing products that use simple sliders and levers. Explore a range of free-standing structures in the school and local environment e.g. everyday products and buildings. Test and evaluate a range of fruit and vegetables. Explore: • Who products are for. • What products are for. • How they work and are used. • What materials they are made from. • What they like and dislike about them.
Experiential Knowledge • **Our Church /Our Community** **Visit / Place / Person**	Celebrations of different cultures		
Protected Characteristics	Gender	Gender, Age, Race	Religion, Belief

Design and Technology - Concepts Progression Map

Year 3	*Autumn Term*	*Spring Term*	*Summer Term*
	Mechanisms Pop-up Cards	**Food & Nutrition** Rainbow Wraps	**Structures** Famous Buildings
Enquiry Question	Can you make a pop-up card with a lever and a linkage?	Can you make a healthy sandwich snack?	Can you make a free-standing structure from cardboard nets?
St Thomas' Life Question	How important is sending cards at Christmas time?	What does it mean to 'eat healthily'?	What is 'quality housing' and is it important for all?
Substantive Knowledge *Technical Knowledge & Practical Skills.* ***Mechanisms*** ***Food & Nutrition*** ***Structures*** ***Electrical Systems*** ***Textiles***	Use and explore complex pop-ups. Use linkages to make movement larger or more varied. Cut slots. Cut internal shapes. Distinguish between fixed and loose pivots. Use lolly sticks/card to make levers and linkages.	Know that food is grown, reared and caught in the UK, Europe and the wider world. Know about a range of fresh and processed ingredients appropriate for their product. Know how to prepare simple dishes safely and hygienically. Demonstrate hygienic food storage. Develop sensory food vocabulary/knowledge using taste, smell, texture and touch. Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. Follow instructions and recipes. Join and combine a range of ingredients. Show an awareness of a healthy diet. Mix and spread ingredients	Prototype frame and shell structures. Select and choose appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. Develop and use knowledge of how to construct strong, stiff shell structures. Use tabs. Develop and use knowledge of nets of cubes and cuboids and where appropriate, more complex 3D shapes. Explain their choice of materials according to functional properties and aesthetic qualities. Use finishing techniques suitable for the product they are creating to improve the appearance of their product using a range of equipment including ICT.
Key Vocabulary	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations	shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype
Disciplinary Knowledge **Design** **Make**	<u>Understanding Contexts, users and purposes</u> Develop a design criteria Describe the user, purpose and design features of their products and explain how they will work. Generate ideas based on the user. <u>Generating, developing, modelling and communicating ideas.</u>	<u>Understanding Contexts, users and purposes</u> Develop a design criteria Describe the user, purpose and design features of their products and explain how they will work. Generate ideas based on the user. <u>Generating, developing, modelling and communicating ideas.</u>	<u>Understanding Contexts, users and purposes</u> Develop a design criteria Describe the user, purpose and design features of their products and explain how they will work. Generate ideas based on the user. <u>Generating, developing, modelling and communicating ideas.</u>

Design and Technology - Concepts Progression Map

Evaluate	Generate ideas for an item, considering its purpose and the users. Identify a purpose and establish criteria for a successful product. Explore, develop and communicate design proposals by using annotated sketches and prototypes to develop, model and communicate ideas. Develop their design ideas applying findings from their earlier research. <u>Planning</u> Plan the order of their work before starting. Select suitable tools, equipment, materials and components. <u>Evaluating own products</u> Discuss how well the finished product meets the design criteria and how well it meets the needs of the user. Consider and explain how the finished product could be improved. Take into account others' views. <u>Evaluating Existing Products</u> Disassemble and evaluate familiar products. Identify what does and does not work in a product. Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	Generate ideas for an item, considering its purpose and the users. Identify a purpose and establish criteria for a successful product. Explore, develop and communicate design proposals by using annotated sketches and prototypes to develop, model and communicate ideas. Develop their design ideas applying findings from their earlier research. <u>Planning</u> Plan the order of their work before starting. Select suitable tools, equipment, materials and components <u>Evaluating own products</u> Discuss how well the finished product meets the design criteria and how well it meets the needs of the user. Consider and explain how the finished product could be improved. Take into account others' views. <u>Evaluating Existing Products</u> Disassemble and evaluate familiar products. Identify what does and does not work in a product. Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	Generate ideas for an item, considering its purpose and the users. Identify a purpose and establish criteria for a successful product. Explore, develop and communicate design proposals by using annotated sketches and prototypes to develop, model and communicate ideas. Develop their design ideas applying findings from their earlier research. <u>Planning</u> Plan the order of their work before starting. Select suitable tools, equipment, materials and components <u>Evaluating own products</u> Discuss how well the finished product meets the design criteria and how well it meets the needs of the user. Consider and explain how the finished product could be improved. Take into account others' views. <u>Evaluating Existing Products</u> Disassemble and evaluate familiar products. Identify what does and does not work in a product. Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.
Experiential Knowledge • Our Church /Our Community • Visit / Place / Person		STEM Week	
Protected Characteristics			

Design and Technology - Concepts Progression Map

Year 4	Autumn Term	Spring Term	Summer Term
	Food & Nutrition Greek Salads	**Electrical Systems** Lamps	**Textiles** Explorer Bags
Enquiry Question	Can you make a healthy Greek salad?	Can you create a circuit to light up a lamp?	Can you use fabric and thread to make a bag?
St Thomas' Life Question	Is a 'healthy diet' the same, everywhere?	How can different types of lighting bring joy?	What is most important on a long journey?
Substantive Knowledge Technical Knowledge & Practical Skills. **Mechanisms** **Food & Nutrition** **Structures** **Electrical Systems** **Textiles**	Know that food is grown, reared and caught in the UK, Europe and the wider world. Know about a range of fresh and processed ingredients appropriate for their product. Know how to prepare simple dishes safely and hygienically. Demonstrate hygienic food storage. Analyse the taste, texture, smell and appearance of a range of food. Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. Plan the main stages of a recipe, listing ingredients, utensils and equipment. Make healthy eating choices from an understanding of a balanced diet. That food and drink are needed to provide energy for the body.	Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.	Prototype a product using J-cloths. Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. Join fabrics using running stitch, over-sewing and back-stitch. Use appropriate decoration techniques (applique or simple stitches.) Understand the need for patterns and create a simple pattern. Understand seam allowance. Explore fastenings and recreate some e.g. sew on buttons and make loops.
Key Vocabulary	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations	series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip control, program, system, input device, output device user, purpose, function, prototype, design criteria, innovative, appealing, design brief	fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces

Design and Technology - Concepts Progression Map

Disciplinary Knowledge **Design** **Make** **Evaluate**	Understanding Contexts, users and purposes Develop their own design criteria Describe the user, purpose and design features of their products and explain how they will work. Gather information about user needs. Generating, developing, modelling and communicating ideas. Generate realistic design ideas and their own design criteria through discussion, focusing on the needs of the user. Draw up a specification for their design. Use annotated sketches from different views and prototypes/patter pieces to develop, model and communicate ideas. Planning Develop a clear idea of what has to be done, ordering how to use materials, equipment and processes. Select suitable tools, equipment, materials and components and explain their choices. Use the correct technical vocabulary Evaluating own products Decide which design idea to develop. Evaluate their ideas and products both during and at the end of the assignment against the design criteria. Evaluate their products, carrying out appropriate tests. Think about their ideas as they progress and be willing to change things if this helps them improve their work. Evaluating Existing Products Disassemble and evaluate familiar products. Identify what does and does not work in a product. Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	Understanding Contexts, users and purposes Develop their own design criteria Describe the user, purpose and design features of their products and explain how they will work. Gather information about user needs. Generating, developing, modelling and communicating ideas. Generate realistic design ideas and their own design criteria through discussion, focusing on the needs of the user. Draw up a specification for their design. Use annotated sketches from different views and prototypes/patter pieces to develop, model and communicate ideas. Planning Develop a clear idea of what has to be done, ordering how to use materials, equipment and processes. Select suitable tools, equipment, materials and components and explain their choices. Use the correct technical vocabulary Evaluating own products Decide which design idea to develop. Evaluate their ideas and products both during and at the end of the assignment against the design criteria. Evaluate their products, carrying out appropriate tests. Think about their ideas as they progress and be willing to change things if this helps them improve their work. Evaluating Existing Products Disassemble and evaluate familiar products. Identify what does and does not work in a product. Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	Understanding Contexts, users and purposes Develop their own design criteria Describe the user, purpose and design features of their products and explain how they will work. Gather information about user needs. Generating, developing, modelling and communicating ideas. Generate realistic design ideas and their own design criteria through discussion, focusing on the needs of the user. Draw up a specification for their design. Use annotated sketches from different views and prototypes/patter pieces to develop, model and communicate ideas. Planning Develop a clear idea of what has to be done, ordering how to use materials, equipment and processes. Select suitable tools, equipment, materials and components and explain their choices. Use the correct technical vocabulary Evaluating own products Decide which design idea to develop. Evaluate their ideas and products both during and at the end of the assignment against the design criteria. Evaluate their products, carrying out appropriate tests. Think about their ideas as they progress and be willing to change things if this helps them improve their work. Evaluating Existing Products Disassemble and evaluate familiar products. Identify what does and does not work in a product. Investigate and analyse books and, where available, other products with lever and linkage mechanisms. Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.
Experiential Knowledge • Our Church /Our Community • Visit / Place / Person	Link with History – Ancient Greeks and a study of their diet.	Link with Science – electricity and circuits.	Link with English - Brightstorm
Protected Characteristics			

Design and Technology - Concepts Progression Map

Year 5	Autumn Term	Spring Term	Summer Term
	Mechanisms cam toys	**Food & Nutrition** Vegetable Soup	**Structures** Playground Shelters
Enquiry Question	Can you make a moving toy?	Can you make a hearty healthy soup?	Can you build a strong structure?
St Thomas' Life Question	How do toys bring a child joy?	Is eating sustainably the way forward?	Is the quickest way always the best way?
Substantive Knowledge Technical Knowledge & Practical Skills. **Mechanisms** **Food & Nutrition** **Structures** **Electrical Systems** **Textiles**	Use a cam to make an up and down mechanism. Develop measuring, marking, cutting, shaping and joining skills. Build frameworks using a range of materials to support mechanisms. Cut accurately and safely to a marked line. Join and combine materials with temporary, fixed or moving joints.	Know that food is grown, reared and caught in the UK, Europe and the wider world. Know that the seasons may affect the food available. Know how food is processed into ingredients. Know how to prepare and cook a variety of dishes safely and hygienically using, where appropriate, a heat source. Taste a range of ingredients/food items to develop a sensory food vocabulary for use when designing. Weigh and measure using scales. Cut and shape ingredients, using appropriate tools and equipment. Join and combine food ingredients appropriately.	Join materials using appropriate methods e.g. glue, tape. Elastic bands and card triangles. Create a shell or frame structure; strengthen frames with diagonal struts. Measure and mark square selection, strip and dowel accordingly to 1cm. Use a glue gun with close 1:1 supervision.
Key Vocabulary	cam, snail cam, off-centre cam, peg cam, pear shaped cam, follower, axle, shaft, crank, handle, housing, framework, rotation, rotary motion, oscillating motion, reciprocating motion annotated sketches, exploded diagrams mechanical system, input movement, process, output movement design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief	ingredients, herbs, vegetables, vitamins, nutrients, nutrition, healthy, varied, source, seasonality, utensils, combine, stir, pour, grate, peel, design specification, innovative, research, evaluate, design brief	frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional
Disciplinary Knowledge **Design** **Make** **Evaluate**	<u>Understanding Contexts, users and purposes</u> Develop a simple design specification Describe the user, purpose and design features of their products and explain how they will work. Carry out research to identify user's needs. <u>Generating, developing, modelling and communicating ideas.</u> Generate ideas by carrying out research through interviews.	<u>Understanding Contexts, users and purposes</u> Develop a simple design specification Describe the user, purpose and design features of their products and explain how they will work. Carry out research to identify user's needs. <u>Generating, developing, modelling and communicating ideas.</u> Generate ideas by carrying out research through interviews.	<u>Understanding Contexts, users and purposes</u> Develop a simple design specification Describe the user, purpose and design features of their products and explain how they will work. Carry out research to identify user's needs. <u>Generating, developing, modelling and communicating ideas.</u> Generate ideas by carrying out research through interviews.

Design and Technology - Concepts Progression Map

	Draw up a specification for their design. Use results of investigations, information sources, including ICT when developing design ideas. <u>Planning</u> Formulate lists of resources and step-by-step plans to guide making, listing tools, equipment, materials and components. Select suitable tools, equipment, materials and components and explain their choices. Work within the constraints of time. <u>Evaluating own products</u> Use design criteria to inform decisions about ways to proceed. Justify decisions about materials and methods of construction. Make suggestions as to how their design could be improved. Seek evaluation from others. <u>Evaluating Existing Products</u> Investigate: •How well products have been designed. •How well products have been made. •Whether they are fit for purpose. •Whether products meet user needs. •Why materials have been chosen. •The methods of construction used. •How well they work. •How innovative they are. •How sustainable they are. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	Draw up a specification for their design. Use results of investigations, information sources, including ICT when developing design ideas. <u>Planning</u> Formulate lists of resources and step-by-step plans to guide making, listing tools, equipment, materials and components. Select suitable tools, equipment, materials and components and explain their choices. Work within the constraints of time. <u>Evaluating own products</u> Use design criteria to inform decisions about ways to proceed. Justify decisions about materials and methods of construction. Make suggestions as to how their design could be improved. Seek evaluation from others. <u>Evaluating Existing Products</u> Investigate: •How well products have been designed. •How well products have been made. •Whether they are fit for purpose. •Whether products meet user needs. •Why materials have been chosen. •The methods of construction used. •How well they work. •How innovative they are. •How sustainable they are. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	Draw up a specification for their design. Use results of investigations, information sources, including ICT when developing design ideas. <u>Planning</u> Formulate lists of resources and step-by-step plans to guide making, listing tools, equipment, materials and components. Select suitable tools, equipment, materials and components and explain their choices. Work within the constraints of time. <u>Evaluating own products</u> Use design criteria to inform decisions about ways to proceed. Justify decisions about materials and methods of construction. Make suggestions as to how their design could be improved. Seek evaluation from others. <u>Evaluating Existing Products</u> Investigate: •How well products have been designed. •How well products have been made. •Whether they are fit for purpose. •Whether products meet user needs. •Why materials have been chosen. •The methods of construction used. •How well they work. •How innovative they are. •How sustainable they are. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.
Experiential Knowledge • Our Church /Our Community • Visit / Place / Person	Link with RE – Cam Toy to be made for a 'Christmas Display' in church incorporating Christian Symbols of Christmas.	STEM Week Link with History – Anglo Saxon farming and living sustainably.	Visit to our outdoor area and consideration of our own playground shelter.
Protected Characteristics	 Race & Religion		

Design and Technology - Concepts Progression Map

Year 6	Autumn Term	Spring Term	Summer Term
	Textiles Keep-Sake Cushions	**Food & Nutrition** Bake Off	**Electrical Systems**
Enquiry Question	Can you make a cushion to keep something special safe?	Can you bake a cake worthy of a prize?	Can you control a model using an ICT control programme?
St Thomas' Life Question	What constitutes a treasured possession?	How important is working together?	What might the future of technology look like?
Substantive Knowledge Technical Knowledge & Practical Skills. **Mechanisms** **Food & Nutrition** **Structures** **Electrical Systems** **Textiles**	Decorate textiles appropriately, often before joining components. Combine fabrics to create more useful properties. Pick and tack fabric pieces together. Understand pattern layout. Create 3D products using pattern pieces and seam allowance. Join fabrics using over-sewing, back stitch and blanket stitch. Make quality products.	Know that food is grown, reared and caught in the UK, Europe and the wider world. Know that the seasons may affect the food available. Know how food is processed into ingredients. Know how to prepare and cook a variety of dishes safely and hygienically using, where appropriate, a heat source. Prepare food products taking into account the properties of ingredients and sensory characteristics. Select and prepare foods for a particular purpose. Show an awareness of a healthy diet and making their choices based on a balanced diet. Know that different food and drink contain nutrients, water and fibre that are needed for health.	Control a model using an ICT control programme. Incorporate a motor and a switch into a model. Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. Use automatic wire strippers, twist and tape electrical connections, screw connections and connecting blocks.
Key Vocabulary	seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief	series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose
Disciplinary Knowledge **Design** **Make**	<u>Understanding Contexts, users and purposes</u> Develop their own design specification Describe the user, purpose and design features of their products and explain how they will work. Carry out independent research to identify user's needs.	<u>Understanding Contexts, users and purposes</u> Develop their own design specification Describe the user, purpose and design features of their products and explain how they will work. Carry out independent research to identify user's needs.	<u>Understanding Contexts, users and purposes</u> Develop their own design specification Describe the user, purpose and design features of their products and explain how they will work. Carry out independent research to identify user's needs.

Design and Technology - Concepts Progression Map

Evaluate	<u>Generating, developing, modelling and communicating ideas.</u> Generate innovative ideas drawing on research including surveys, interviews and questionnaires. Draw up a specification for their design, justifying their choices. Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways including exploded diagrams, discussion, prototypes, pattern pieces and computer-aided design. <u>Planning</u> Develop a clear idea of what has to be done, ordering how to use materials, equipment and processes and suggesting alternative methods of making if first attempts fail. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <u>Evaluating own products</u> Identify strengths and areas to develop in their ideas and products against their design specification. Consider the views of others to make improvements. Record their evaluations using drawings with labels. <u>Evaluating Existing Products</u> Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. • How innovative they are. • How sustainable they are. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	<u>Generating, developing, modelling and communicating ideas.</u> Generate innovative ideas drawing on research including surveys, interviews and questionnaires. Draw up a specification for their design, justifying their choices. Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways including exploded diagrams, discussion, prototypes, pattern pieces and computer-aided design. <u>Planning</u> Develop a clear idea of what has to be done, ordering how to use materials, equipment and processes and suggesting alternative methods of making if first attempts fail. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <u>Evaluating own products</u> Identify strengths and areas to develop in their ideas and products against their design specification. Consider the views of others to make improvements. Record their evaluations using drawings with labels. <u>Evaluating Existing Products</u> Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. • How innovative they are. • How sustainable they are. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.	<u>Generating, developing, modelling and communicating ideas.</u> Generate innovative ideas drawing on research including surveys, interviews and questionnaires. Draw up a specification for their design, justifying their choices. Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways including exploded diagrams, discussion, prototypes, pattern pieces and computer-aided design. <u>Planning</u> Develop a clear idea of what has to be done, ordering how to use materials, equipment and processes and suggesting alternative methods of making if first attempts fail. Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <u>Evaluating own products</u> Identify strengths and areas to develop in their ideas and products against their design specification. Consider the views of others to make improvements. Record their evaluations using drawings with labels. <u>Evaluating Existing Products</u> Investigate: • How well products have been designed. • How well products have been made. • Whether they are fit for purpose. • Whether products meet user needs. • Why materials have been chosen. • The methods of construction used. • How well they work. • How innovative they are. • How sustainable they are. Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.
Experiential Knowledge • Our Church /Our Community • Visit / Place / Person			
Protected Characteristics			