

‘Good buildings come from good people, and all problems are solved by good design.’

STEPHEN GARDINER

Intent

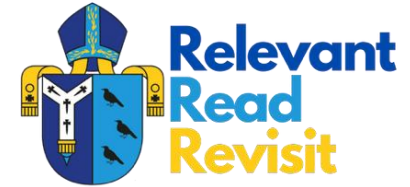
At St Thomas a Becket, children design and make products that solve real and relevant problems within a variety of contexts. Through evaluation of past and present Design and Technology, they develop a critical understanding of its impact on daily life and the wider world. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Children learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens.

Children should experience the joy of solving a problem and see an idea come to life. They then evaluate in order to develop the idea further, creating a finished product to the highest standard.

At St Thomas a Becket, the curriculum for design and technology aims to ensure that all pupils:

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- Build and apply a repertoire of technical knowledge, understanding, skills and language in order to design and make high-quality prototypes and products for a wide range of users
- Critique, evaluate and test their ideas and products against existing products and the work of others and make changes
- Understand and apply the principles of nutrition and learn how to cook

Through a variety of creative and practical activities, we teach the technical 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).



Implementation

We teach the National Curriculum which is extended through the DT Association's Projects on a Page national scheme of work, supported by a clear skills and knowledge progression. This ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children.

The context for the children's work in Design and Technology is also well considered with regular reference to existing products.

Each year group will complete three DT units a year. Each unit should be planned to progress through the explore, design, make and evaluate cycle, and the skills learned in each section accumulate with the children utilising all of them in their final product design.

Children are presented with a purpose or a problem. Teamwork, exploration of existing products, prototypes and preliminary sketches are used in order to help the children with their problem solving. Through designing and making products that solve real and relevant problems within a variety of contexts, they consider their own and others' needs, wants and values. Children are given choice and a range of tools to choose from. They evaluate their own products against a design-criteria with each of the steps rooted in technical knowledge and vocabulary.

Children are always taught safe procedures when using any tools, and safe working practices are used at all times.

DT CURRICULUM PROGRESSION



Design and evaluate

	N/R/1 class		2/3 class		4/5/6 class		
	EYFS	Y1	Y2	Y3	Y4	Y5	Y6

Knowledge Core / Specific	Children can make alterations to improve their models.	<i>Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups</i>	<i>Design functional and appealing products for a particular user based on simple design criteria.</i>	<i>Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific users</i>	<i>Explain choice of materials according to functional properties and aesthetic qualities.</i>	<i>Generate realistic and appropriate ideas and their own design criteria through research and discussion, focusing on the needs of the user</i>	<i>Test their mock-ups using the iterative design process and make amendments to their design. Then, test their product against the original design criteria and changed design plan with regards to the intended user</i>
	Children can talk about the models they make.		<i>Evaluate ideas and finished products against design criteria, including intended user and purpose</i>	<i>Explore a range of initial ideas, existing products, and make design decisions to develop a final product linked to user and purpose.</i>	<i>Test their product against the original design criteria and with the intended user</i>		
	Children can self-select the appropriate tool.	<i>Use simple drawings and labels to record ideas</i>		<i>Use words, annotated sketches and information as appropriate to develop and communicate ideas and plan the main stages of making.</i>	<i>Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</i>	<i>Develop a simple design specification to guide their thinking, taking account of constraints including time, resources and cost</i>	<i>Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team</i>
	Children consider the purpose of their model.	<i>Evaluate ideas and finished products against design criteria, including intended user and purpose</i>		<i>Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</i>	<i>Record the evaluations using e.g., simple tables / graphs / charts such as star diagrams.</i>	<i>Investigate existing products which have the same or similar features of the product that is being designed. E.g., pulleys.</i>	<i>Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources that they will use to inform their design plans.</i>
				<i>Record the evaluations using e.g., simple</i>		<i>Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. Use annotated sketches and prototypes to develop, model and communicate ideas.</i>	<i>Evaluate their own products and ideas against criteria and user needs, as they design and make. Test products with intended user and critically</i>

				tables / graphs / charts such as star diagrams.		<i>Explore and explain a range of initial ideas, and make design decisions to develop mock-ups and a final product linked to user and purpose.</i> <i>Evaluate their own products and ideas against criteria and user needs, as they design and make. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Consider the views of others to improve their work.</i> <i>Accurately record the evaluations using e.g., tables / graphs / charts such as star diagrams.</i> <i>Compare the final product to the original design specification</i>	evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Consider the views of others to improve their work. <i>Accurately record the evaluations using e.g., tables / graphs / charts such as star diagrams.</i> <i>Compare the final product to the original design specification</i>
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Vocabulary	Tier 2 Draw Model Sort Decide Same Different	Tier 2 Feature User Select Purpose Popular Mock-up	Tier 2 Evaluate Improve Compare Generate Produce Describe Apply	Tier 2 Annotate Evaluation Preference Function Appealing Arrange collaborate explain Examine Reflect Adapt	Tier 2 Alter Prototype Functional Aesthetics Incorporate Analyse Diagram Tier 3 Design brief/criteria	Tier 2 Innovative Research Source Sketch Critique Articulate Deconstruct Modify	Tier 2 Refine Functionality Innovation Authentic Tier 3 Design specification Exploded diagram

Substantive Conceptual Knowledge (Revisited over time)

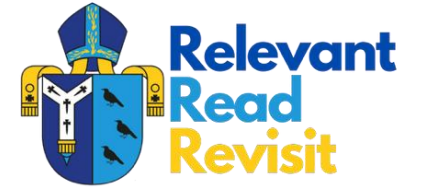
1. Textiles (Templates and joining techniques, 2D shape to 3D products, combining different fabric shapes)
2. Food (Preparing fruit and veg, a healthy and varied diet, celebrating season and culture)
3. Mechanisms (Levers and sliders, wheels and axis, levers and linkages)
4. Structures (Freestanding structures, shell structures, framed structures)
5. Electrical systems (Simple circuits and switches, more complex switches and circuits)

1. Textiles (Templates and joining techniques, 2D shape to 3D products, combining different fabric shapes)

	N/R/1 class		2/3 class		4/5/6 class		
	EY	Y1	Y2	Y3	Y4	Y5	Y6
Knowledge Substantive	Know that there are similarities and differences between materials and that some are more appropriate for some purposes than others.		Know how simple 3D textile products are made, using a template to create two identical Shapes.	Understand the need for patterns and seam allowances			A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics Fabrics can be strengthened, stiffened and reinforced where appropriate
Tools and skills Disciplinary	Join materials in different ways Use scissors to cut materials		Know how to join fabrics using different techniques e.g. running stitch, over stitch, glue, stapling. Be able to thread a needle Create a running stitch. Use scissors correctly and with some accuracy to cut fabrics	Use scissors correctly and with accuracy to cut fabrics - measure carefully to avoid mistakes. Create patterns and seam allowances. Select materials based on characteristics e.g. strength, and aesthetic qualities e.g. pattern. Know how to strengthen, stiffen and			Create a satin stitch and a chain stitch. Know how to use a variety of fastenings and selecting the most appropriate. Make products that are strengthened, stiffened and reinforced where appropriate. Combine patterns to create a 3-D textile product.

			Use and explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. Use simple finishing techniques suitable for the product they are creating.	reinforce existing fabrics Know how to securely join two pieces of fabric together Create a cross stitch, backwards running stitch and blanket stitch to join fabrics. Use finishing and decorative techniques suitable for the product they are designing and making. Join these using a mixture of learned stitches and fabric glue.			Work within the constraints of time, resources and cost
Vocabulary	Tier 1 Names of basic tools – e.g scissors Materials – paper, card, fabric Tier 2 Decorate Join Make		Tier 1 Needle Thread Pins Tier 2 Pattern (pieces) Mark out Tier 3 Stitch Running stitch	Tier 2 Compartment Technique Stiffen Secure Right side Wrong side DT specific- Tier 3 Names of fabrics – felt, net, hessian, cotton, polyester, viscose, calico Fasten/Fastening Seam Seam allowance Applique			Tier 2 Reinforce DT specific – Tier 3 Name of textiles (y4 plus other textiles used) Pinking shears Iron transfer Names of fastenings – snap fasteners, poppers, zip, hook and eye, button hole Hem Satin stitch Chain stitch

DT CURRICULUM PROGRESSION



				Cross-stich Backwards running stitch			
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2. Food (Preparing fruit and veg, a healthy and varied diet, celebrating season and culture)

	N/R/1 class		2/3 class		4/5/6 class		
	EY	Y1	Y2	Y3	Y4	Y5	Y6
Knowledge Substantive / Procedural	Know that fruits and vegetables grow. Name some healthy and unhealthy foods. Know that we need to wash hands before handling and preparing food as basic hygiene procedures.	Explain what we need to do to be hygienic when preparing and handling food. Understand that different fruits and vegetables have different tastes, textures etc.	Know and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell Guide.	Understand how ingredients can be fresh, pre-cooked or processed and whether they are grown, reared or caught Know the main stages of a recipe, including how ingredients are listed, utensils and equipment Know and understand about seasonality in relation to food products and the source of different food products	Learn how to use heat sources safely and appropriately according to the required cooking temperature needed. Know when and where fruits and vegetables are grown and learn about seasonality in the UK	Understand about seasonality in relation to food products and the source of different food Explain how to be safe and hygienic and follow own guidelines.	Understand how food storage has changed over the course of time.
Tools and Skills; Disciplinary	Use simple utensils and equipment to e.g. squeeze and chop safely Handle and explore fruits and vegetables and describe their sensory features.	Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences	Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product <i>Select from and use a range of tools and equipment to perform practical tasks; juicer, peeler, grater, knife, spoon, scissors</i>	Use appropriate equipment and utensils accurately to prepare and combine food e.g. knives, chopping board, weighing scales, cling film, grater, peeler Plan the main stages of a recipe, listing ingredients, utensils and equipment	Use appropriate utensils and equipment accurately to measure and combine appropriate ingredients Make, decorate and present the food product appropriately for the intended user and purpose	Use utensils and tools accurately and safely to combine, knead, fold, whisk and shape Create a step-by-step recipe, including a list of ingredients and utensils	Work within the constraints of time, resources and cost Adapt recipes to change appearance, taste, texture or aroma. Prepare and cook a savoury dish safely and hygienically including, where

				Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics			appropriate, the use of a heat source.
Vocabulary	Tier 1 Simple fruits and vegetable names Cut Some sensory words e.g. soft knife chopping board Knife spoon Tier 2 Stir Pour mix squeeze	Tier 1 Fruit and vegetable names Skin Seed Pip Tier 2 Sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard Flesh Slice Peel Healthy Healthy diet Ingredients Taste Arrange Grown	Tier 2 Texture Fresh Appearance Ingredients Hygiene/hygienic Tier 3 Protein Fat Sugar Carbohydrates Dairy	Tier 1 Hot Tier 2 Spicy Greasy Moist Savoury Hygienic Edible Reared Frozen Processed Manufactured Seasonal Harvested Varied diet Sensory	Tier 2 Yeast Dough Bran Flour Wholemeal Unleavened Baking soda Spice Herbs Vitamins Nutrients Nutrition Seasonality Utensils Combine Fold Knead Whisk Beat Roll out Shape	Tier 2 Allergy Intolerance Savoury Seasonality Cultural Tier 3 Gluten	

3. Mechanisms (Levers and sliders, wheels and axis, levers and linkages)

	N/R/1 class		2/3 class		4/5/6 class		
	EY	Y1	Y2	Y3	Y4	Y5	Y6
Knowledge Substantive / Procedural	Know that there are multiple ways to join card/paper. Build using construction kits and loose parts.	Learn the terms: pivot, lever and linkage, what they do and how they work. Know that different mechanisms produce different types of movement.	Distinguish between fixed and freely moving axles Know how axles enable a wheel to turn		Understand how lever and linkage Mechanisms work. Distinguish between fixed and loose pivots		<i>Know that mechanical systems have an input, process and an output.</i> <i>Know how gears and pulleys can be used to speed up, slow down or change the direction of movement</i> <i>Know that, when attached to a motor, a smaller pulley will rotate much quicker than a larger one.</i> <i>Know what a driver and follower is.</i> <i>Know how to make two pulleys move in the same direction and know how to make two pulleys move in opposite directions</i> <i>Know about some key inventors/designers/engineers/manufacturers of ground-breaking products</i> <i>Know how pneumatics work to make something move</i>

Tools and skills Disciplinary	Know how to use basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card Experience of simple cutting, shaping and joining skills using scissors, glue, paper, card, fasteners and masking tape				Use working lever and linkage mechanisms in their products. Select and use appropriate utensils and equipment with some accuracy. Select from and use finishing techniques that are suitable.	<i>Use woodworking skills to measure and cut materials accurately</i> <i>Select from and use a range of tools and equipment to make products that are accurately assembled and well finished</i> <i>Work within the constraints of time, resources and cost</i>
Vocabulary	Tier 1 Up Down Paper card Pull Push Cut Join Flap	Tier 1 Forwards Backwards Straight Curve Wheel Tier 2 Slider Lever Pivot Slot Bridge/guide card Vehicle Axle Axle holder Chassis Body	Resource names: Masking tape Paper fastener Dowel Balsa wood Plastic Tool names: Hacksaw G-clamp Glue gun		Tier 2 Mechanism Linkage Bridge Guide System Input Process Output Linear Rotary Oscillating Reciprocating	Tier 1 Switch Tier 2 Gear Rotation Spindle Driver Axle Motor circuit Circuit diagram Mechanical system Electrical system Movement Control Pump Seal Tier 3 Drive belt

							Pulley Names of resources/materials Split pin Fastener
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4. Structures (Freestanding structures, shell structures, framed structures)

	Skylark Class			Chough Class		Kestrel Class	
	EY	Y1	Y2	Y3	Y4	Y5	Y6
Knowledge Substantive / Procedural	Understand that things are made from different materials.	Know that materials have different characteristics and be able to identify and describe them. Know that there are multiple ways to join materials and that there are advantages and draw backs to each one.		Develop knowledge of how to construct strong, stiff shell structures Develop knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes		Know how to join thin sections of wood Understand triangulation Understand how to strengthen, stiffen and reinforce 3-D frameworks so it is stronger, stiffer and more stable	
Tools and skills Disciplinary	Use basic tools e.g., scissors or hole punches with construction materials e.g., plastic, card Use big and small construction kits to build walls, towers and frameworks	Make free standing structures and make structures stronger and stiffer when building them. Select new and reclaimed materials and construction kits to build their structures		Construct strong, stiff shell structures. Use nets of cubes and cuboids when creating more complex shapes.		Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join wood and other construction materials to make frameworks	

	Use different methods of joining card and Paper Join using glue, paper fasteners and masking tape.	Select from and use a range of materials and components according to their characteristics					
Vocabulary	Tier 1 Cut Fold Join Fix Wall Tower Top Tier 2 Weak Strong Underneath Side Thin (thinner) Thick (thicker) Straight curved Metal Wood Plastic	Tier 2 Base Edge Surface Corner Point Cuboid Cube Cylinder		Tier 2 (Shell) structure Framework Three-dimensional (3-D) Net Stiffen Strengthen Capacity Marking out Score Shaping Tabs Adhesives Assemble Accuracy Material Stiff/stiffen		Tier 2 Frame structure Reinforce Triangulation Stability Temporary Permanent Tension Strut	

5. Electrical systems (Simple circuits and switches, more complex switches and circuits)

	N/R/1		2/3		4/5/6		
	EY	Y1	Y2	Y3	Y4	Y5	Y6
Knowledge <i>Substantive / Procedural</i>						Know how electrical circuits work, that you need a closed circuit and how to achieve this. Identify common appliances that run on electricity. Know how to construct a simple series electrical circuit, identifying and naming its basic parts including: • Cells • Wires • Bulbs • Switches • Buzzers Identify whether a lamp will light, or a buzzer will work in a simple series circuit, based on whether the lamp or buzzer is part of a complete circuit with a battery. Recognise that a switch opens and closes a circuit and associate this with whether a lamp lights (or buzzer works) in a simple series circuit.	
Tools and skills Disciplinary	Explore a range of circuits and switches in continuous provision.					Use electrical systems in their products such as series	

			circuits with bulbs, switches, buzzers. Apply understanding of computing to program and control their products	
Vocabulary	Switch On/off Wires		Tier 2 Circuit Series circuit Fault Connection Insulator Conductor Program System Resources Switch Switch Battery Battery holder Bulb Bulb holder Buzzer Wire Crocodile clip	