

Tonwell St Mary's School Curriculum Overview of Intent for Design and Technology

Overall aims:

We aim to ensure all children have the knowledge, understanding and skills to engage in the process of designing, making and evaluating products. Our long-term aim is to enable our children to grow into enterprising citizens who can use problem-solving and creativity in their everyday lives, and possibly in their professional roles.

Our unique context:

Due to the unique context of our school with mixed-age classes and rolling programmes of study, we have organised our curriculum for Design and Technology in the following ways:

From the Early Years, our children are given opportunities to explore problems solving and develop their creativity. They are involved in simple product design, making and evaluating. Children grow their own vegetables in the outside area and cook.

The curriculum in KS1 and 2 is organised so that they use all four components: design, make, evaluate and technical knowledge, termly. We ensure a balance of construction/materials/textiles across the year. There is a focus on cooking and nutrition at least annually. Links are made through our Forest School and Harvest Festival for children to learn about seasonality, where our food comes from and 'growing their own'.

We use our Friends of Tonwell Summer Fair as a chance for KS2 children to develop an understanding of enterprise, with children organising products for their own stall to make money for school funds. We use some workshops to support staff with technical expertise and resources.

	Autumn Term		Spring Term		Summer Term	
EYFS Years A & B	<p>This is Me</p> <p>What makes a healthy dessert? (Handas Surprise – fruit salad making)</p> <p>Which ingredients, methods and technologies are used to bake bread? (Harvest)</p>	<p>Celebrations</p> <p>What makes a good Christmas decoration? How can I research, design, make and evaluate my own Christmas decoration?</p> <p>Which ingredients, methods and technologies are used to bake gingerbread?</p>	<p>Ticket to Ride</p> <p>What makes a good method of transport? Can I explore different types of transport and make my own from junk modelling?</p> <p>How can I make my own lantern for Chinese New Year?</p>	<p>Come Outside</p> <p>What does a minibeast need in its habitat? Can I make my own habitat for a minibeast?</p> <p>What makes a good Easter bonnet? How can I research, design, make and evaluate it?</p> <p>Which ingredients, methods and technologies are used to make pancakes?</p>	<p>Traditional Tales</p> <p>Can I research, design, make and evaluate a house for the Three Little Pigs?</p> <p>Which ingredients, methods and technologies are used to bake gingerbread?</p> <p>Can I design, make and evaluate my own porridge?</p> <p>What ingredients, methods and</p>	<p>When I Grow Up</p> <p>Can I research, design, make and evaluate a doctors/vets box?</p> <p>Can I research, design and evaluate uniforms for different professions? (vets, nurses, doctors, firefighters, police officers, construction workers etc).</p> <p>Can I research, design and evaluate a toothbrush?</p>

					<p>technologies are used to bake bread? (Little Red Hen)</p> <p>Can I research, design, make and evaluate my own bridge for the three billy goats gruff?</p>	<p>Can I design, make and evaluate a healthy recipe for a family?</p> <p>Which materials and shapes make the best boats?</p>
	<p>Research, design, make, evaluate, techniques, cooking, healthy, balanced, fruits, bread, baking, ingredients, methods, technology.</p>	<p>Research, design, make, evaluate, shape, ingredients, methods, technologies, Christmas decoration, baking, oven, mixing.</p>	<p>Shape, cut, join, change, research, design, make, evaluate, lantern, light, transport.</p>	<p>Research, design, make, evaluate, habitat, minibeast, hat, bonnet, decoration, colours, shape, materials, baking, ingredients, methods, technologies, oven, mixer, tools, amount, pancakes, Shrove Tuesday.</p>	<p>Materials, hard, soft, flexible, transparent, waterproof, stiff, stable, strong, weak, ingredients, consistency, bread, bake, porridge, oven, mix, bridge, stable, wobbly, strong, long, short, research, design, make, evaluate.</p>	<p>Materials, properties, float, sink, waterproof, flexible, stiff, hard, soft, smooth, research, design, make, evaluate, shapes, toothbrush, healthy, gums, mouth, teeth, uniform.</p>
KS1 Year A		<p><u>Home structures</u> How can we design, make and evaluate a home for a favourite story character?</p>		<p><u>Healthy snacks</u> How can we design, make and evaluate a children's fruit snack for playtime?</p>		<p><u>Puppets and sewing</u> How can we design, make and evaluate a glove puppet?</p>
		<p>structure, building, model, construct, home, house, tools, cut, join, assemble, material, fix, structure, strong, stiffer, stable, weak,</p>		<p>design, choose, investigate, taste, arrange, experiment, popular, sort, wash, clean, peel, cut, slice, grate, salad, fruit, vegetables, flesh, skin,</p>		<p>design, label, draw, choose, decide, evaluate, plan, template, fabric, cutting out, sewing, needle, running stitch, gluing, adding, character,</p>

		stable, transparent, build, features, window, glass, wall, roof, door.		grater, chopping board, peeler, seeds, pips, stalk, juice, root, leaf, stone, bunch, crisp, sharp, juicy, sweet, sour, sticky, squashy, smooth, crunchy, scented, waxy		puppet, seam, stitch, thread, strong, quality, features, strengthen, position.
KS1 Year B	<u>Healthy lunches</u> How can we design, make and evaluate a healthy lunch for a person we know?	<u>Superhero masks</u> What materials can we use to design, make and evaluate a mask for a superhero?				<u>Moving pictures with mechanisms</u> How can we design, make and evaluate a picture which comes to life?
	sandwich, wrap, roll, pitta, Harvest,	design, evaluate, predict, pin, pattern, join, cut, shape, measure, fabric, template, needle, thread, ruler, tape, measure, outline, background, mask, strengthen, stitch, quality, pattern repeat, centre, side, line, flat, symmetry, turn				design, discuss, choose, draw, label, hole punch, paper fastener, join, cut carefully, plan, moving, handle, lever, pivot, pull, push, slider, direction, blade, metal, balance, movement, forward, backwards, order, sequence, length
KS2 Year A	<u>Shell Structures</u> How can I design, make and evaluate a Christmas gift box?		<u>Mechanical systems</u> How can I use mechanical systems in my design? (K'nex Challenge through setpoint)		<u>Cooking and Nutrition</u> How much money can I make from a fiver? Young enterprise Fiver Challenge designing, making and evaluating a product for a stall for the school summer fair (savory food) What can we grow in our allotment?	

	shell structure, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, tabs, material,, text, design, make, evaluate, brief	design, evaluate, construct, plan, mechanical, gears pulleys, cams, levers, circuit, motors, join, improve	research, evaluate, analyse, product, generate, communicate, experiment, grow, maintain diet healthy, seasonality
KS2 Year B	<u>Cooking and nutrition</u> How can I design, make and evaluate a healthy pizza with ingredients from Italy? (link to geography – Italian food)	<u>Programming and electrical systems</u> Can I construct and programme a robot? (Lego Robotics through Setpoint) Half day workshop <u>Structure</u> How can I design and make a castle using different nets and recyclable materials to make turrets and towers, and constructing a base to secure them?	<u>Textiles</u> How much money can I make from a fiver? Young enterprise Fiver Challenge designing, making and evaluating a product for a stall for the school summer fair (textiles – e.g. purse, wallet, pencil case) What can we grow in our allotment?
	research, prepare, design, cook, investigate, recipe, taste, experiment, evaluate, ingredient,	computing, programme, monitor, control, product, construct, improve, nets, three-dimensional (3-D) shape, net, cube, cuboid, edge, face, length, width, tabs, material,, text, design, make, evaluate, brief	research, evaluate, analyse, product, generate, communicate, experiment, grow, maintain diet healthy, seasonality
KS2 Year C	<u>Textiles</u> How can I design, make and evaluate a woven bookmark? (link to geography – African weaving)	<u>Mechanical systems</u> How can I use mechanical systems in my design? (K'nex Challenge through setpoint)	<u>Cooking and nutrition</u> How can I design, make and evaluate a savoury scone or muffin? <u>Seasonality</u> What can we grow in our allotment?
	research, investigate, analyse, design, make, cut, shape, join, finish, accurately, textile, aesthetic	design, evaluate, construct, plan, mechanical, gears pulleys, cams, levers, circuit, motors, join, improve	prepare, cook, sweet, savoury, cooking, technique, taste, sour, sharp
KS2 Year D	<u>Cooking and nutrition</u>	<u>Textiles</u>	<u>Programming and electrical systems</u>

	How can I design, make and evaluate a dish using seasonal fruit (blackberries)? (link to history Victorians as Tonwell children picked blackberries every autumn)	How can we use more sustainable materials for future design (designing, making and evaluating a fabric shopping bag)?	Can I construct and programme a robot? (Lego Robotics through Setpoint) Can I evaluate a range of different torches and their features and then develop a functional torch design?
	prepare, cook, sweet, savoury, cooking, technique, seasonality, taste, sour, sharp	evaluate, design, research, make, criteria, develop, prototype, sustainable, aesthetic, cut, join ,sketch, textiles	computing, programme, monitor, control, product, construct, improve, battery, bulb, buzzer, cell, wire, switch, insulator, electricity

Design and technology Skills Ladder

The purpose of the skills ladder is to break down the revisited objectives to show the expectation for each year group. This is not to limit what children can achieve but to give guidance to staff to support short term planning and implementation of the intent document.

Year group	Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products (including food)	Evaluating processes and products
EYFS- Nursery	Use gestures, talking and arrangements of materials and components to show design. Record experiences by drawing and voice recording.	Select appropriate resources. Construct with a purpose, using a variety of resources. Use simple tools and techniques.	Talk about how things work. Look at similarities and differences between existing objects / materials / tools. Describe textures.
EYFS - Reception	Use contexts set by the teacher. Use language of designing and making (join, build, shape, longer, shorter, heavier etc.) Discuss how to make an activity safe and hygienic. Record experiences by drawing, writing, voice recording. Understand different media can be combined for a purpose	Build / construct with a wide range of objects. Select tools & techniques to shape, assemble and join. Replicate structures with materials / components.	Adapt work if necessary. Dismantle, examine, talk about existing objects/structures. Consider and manage some risks. Practise some appropriate safety measures independently.

<p>Year 1</p>	<p>Draw on own experiences to help generate ideas. Suggest ideas and explain what they are going to do. Identify a target group for what they intend to design and make. Model their ideas in card and paper. Develop their design ideas applying findings from their earlier research.</p>	<p>Make their design using appropriate techniques. With help measure, mark out, cut and shape a range of materials. Use tools e.g scissors and a hole punch safely. Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape. Select and use appropriate fruit and vegetables, processes and tools. Use basic food handling, hygienic practices and personal hygiene. Use simple finishing techniques to improve the appearance of their product</p>	<p>Evaluate their product by discussing how well it works in relation to the purpose. Evaluate their products as they are developed, identifying strengths and possible changes they might make. Evaluate their product by asking questions about what they have made and how they have gone about it.</p>
<p>Year 2</p>	<p>Generate their own and other people's experiences. Develop their design ideas through discussion, observation, drawing and modelling. Identify a purpose for what they intend to design and make. Identify simple design criteria. Make simple drawings and label parts.</p>	<p>Begin to select tools and materials; use vocab' to name and describe them. Measure cut and score with some accuracy. Use hand tools safely and appropriately. Assemble, join and combine materials in order to make a product. Cut, shape and join fabric to make a simple garment. Use basic sewing techniques. Follow safe procedures for food safety and hygiene. Choose and use appropriate finishing techniques</p>	<p>Evaluate against their design criteria. Evaluate their products as they are developed, identifying strengths and possible changes they might make. Talk about their ideas, saying what they like and dislike about them.</p>
<p>Year 3</p>	<p>Generate ideas for an item considering its purpose and the user/s. Identify a purpose and establish criteria for a successful product. Plan the order of their work before starting. Explore, develop and communicate design proposals by modelling ideas.</p>	<p>Select tools and techniques for making their product. Measure, mark out, cut, score and assemble components with more accuracy. Work safely and accurately with a range of simple tools. Think about their ideas as they make progress and be willing change things if this helps them improve their work.</p>	<p>Evaluate their product against original design criteria e.g. how well it meets its intended purpose. Disassemble and evaluate familiar products.</p>

	<p>Make drawings with labels when designing.</p>	<p>Measure, tape or pin, cut and join fabric with some accuracy. Demonstrate hygienic food preparation and storage. Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT.</p>	
Year 4	<p>Generate ideas considering the purposes for which they are designing. Make labelled drawings from different views showing specific features. Develop a clear idea of what must be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail. Evaluate products and identify criteria that can be used for their own designs</p>	<p>Select appropriate tools and techniques for making their product. Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. Join and combine materials and components accurately in temporary and permanent ways. Sew using a range of different stitches, weave and knit. Measure, tape or pin, cut and join fabric with some accuracy. Use simple graphical communication techniques.</p>	<p>Evaluate their work both during and at the end of the assignment. Evaluate their products carrying out appropriate tests.</p>
Year 5	<p>Generate ideas through brainstorming and identify a purpose for their product. Draw up a specification for their design. Develop a clear idea of what must be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail. Use results of investigations, information sources, including ICT when developing design ideas.</p>	<p>Select appropriate materials, tools and techniques. Measure and mark out accurately. Use skills in using different tools and equipment safely and accurately Weigh and measure accurately (time, dry ingredients, liquids). Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens. Cut and join with accuracy to ensure a good-quality finish to the product.</p>	<p>Evaluate a product against the original design specification. Evaluate it personally and seek evaluation from others.</p>

Year 6	<p>Communicate their ideas through detailed labelled drawings. Develop a design specification. Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways. Plan the order of their work, choosing appropriate materials, tools and techniques.</p>	<p>Select appropriate tools, materials, components and techniques. Assemble components to make working models. Use tools safely and accurately. Construct products using permanent joining techniques. Make modifications as they go along (Iterative design cycle). Pin, sew and stitch materials together create a product. Achieve a quality product.</p>	<p>Evaluate their products identifying strengths and areas for development and carrying out appropriate tests. Record their evaluations using drawings with labels. Evaluate against their original criteria and suggest ways that their product could be improve.</p>
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Design and Technology Technical Knowledge Ladder

Year Group	Technical knowledge – Materials/structures	Technical knowledge – Mechanisms	Technical knowledge – Textiles	Technical knowledge – Food and Nutrition	Technical knowledge – Electrical systems
EYFS				<ul style="list-style-type: none"> *Practise stirring, mixing, pouring, blending *Discuss how to make an activity safe and hygienic *Begin to understand that some foods are healthy or unhealthy *Understand need for variety in food *Begin to understand that eating well contributes to good health 	
Year 1	<ul style="list-style-type: none"> *begin to measure and join materials, with some support *describe differences in materials *suggest ways to make 	<ul style="list-style-type: none"> *begin to use levers or slides 	<ul style="list-style-type: none"> *measure, cut and join textiles to make a product, with some support *choose suitable textiles 	<ul style="list-style-type: none"> *describe textures *wash hands *begin to say where some foods come from, (i.e. plant or animal) 	

	material/product stronger			<ul style="list-style-type: none"> *describe differences between some food groups (i.e. sweet, vegetable etc.) *discuss how fruit and vegetables are healthy *cut and peel safely, with support 	
Year 2	<ul style="list-style-type: none"> *measure materials *describe some different characteristics of materials *join materials in different ways *use joining, rolling or folding to make it stronger *use own ideas to try to make product stronger 	<ul style="list-style-type: none"> *use levers or slides *begin to understand how to use wheels and axles 	<ul style="list-style-type: none"> *begin to measure textiles *join textiles together to make a product, and explain how I did it *carefully cut textiles to produce accurate pieces *understand that a 3D textile structure can be made from two identical fabric shapes. 	<ul style="list-style-type: none"> *explain hygiene and keep a hygienic kitchen *describe properties of ingredients and importance of varied diet *describe how food is farmed, home-grown, caught *describe “five a day” *cut, peel and grate with increasing confidence 	
Year 3	<ul style="list-style-type: none"> *use appropriate materials *work accurately to make cuts and holes * join materials *begin to make strong structures 	<ul style="list-style-type: none"> *select appropriate tools / techniques *alter product after checking, to make it better *begin to try new/different ideas *use simple lever and linkages to create movement 	<ul style="list-style-type: none"> *join different textiles in different ways *choose textiles considering appearance and functionality *begin to understand that a simple fabric shape can be used to make a 3D textiles project 	<ul style="list-style-type: none"> *carefully select ingredients *use equipment safely *make product look attractive *think about how to grow plants to use in cooking *begin to understand food comes from UK and wider world *describe how healthy diet= variety/balance of food/drinks *explain how food and drink are needed for active/healthy bodies. 	<ul style="list-style-type: none"> *use simple circuit in product

				<ul style="list-style-type: none"> *prepare and cook some dishes safely and hygienically *grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking 	
Year 4	<ul style="list-style-type: none"> *measure carefully to avoid mistakes *attempt to make product strong *continue working on product even if original didn't work *make a strong, stiff structure 	<ul style="list-style-type: none"> *select most appropriate tools / techniques *explain alterations to product after checking it *grow in confidence about trying new / different ideas. *use levers and linkages to create movement 	<ul style="list-style-type: none"> *think about user when choosing textiles *think about how to make product strong *begin to devise a template *explain how to join things in a different way *understand that a simple fabric shape can be used to make a 3D textiles project 	<ul style="list-style-type: none"> *explain how to be safe/hygienic *think about presenting product in interesting/ attractive ways *begin to understand about food being grown, reared or caught in the UK or wider world *describe how a healthy diet=variety/ balance of food and drinks *prepare and cook some dishes safely and hygienically *use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking 	<ul style="list-style-type: none"> *use number of components in circuit *program a computer to control product
Year 5	*select materials	*refine product after	*think about user and	*explain how to be	*incorporate switch into

	<p>carefully, considering intended use of product and appearance</p> <ul style="list-style-type: none"> *explain how product meets design criteria *measure accurately enough to ensure precision *ensure product is strong and fit for purpose *begin to reinforce and strengthen a 3D frame 	<p>testing</p> <ul style="list-style-type: none"> *grow in confidence about trying new / different ideas *begin to use cams, pulleys or gears to create movement 	<p>aesthetics when choosing textiles</p> <ul style="list-style-type: none"> *use own template *think of a range of ways to join things *begin to understand that a single 3D textiles project can be made from a combination of fabric shapes. 	<p>safe / hygienic and follow own guidelines</p> <ul style="list-style-type: none"> *present product well - interesting, attractive, fit for purpose *begin to understand seasonality of foods *understand food can be grown, reared or caught in the UK and the wider world *prepare and cook mostly savoury dishes safely and hygienically including, where appropriate, use of heat source * use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 	<p>product</p> <ul style="list-style-type: none"> *confidently use number of components in circuit *begin to be able to program a computer to control product (Lego Robotics)
Year 6	<ul style="list-style-type: none"> *select materials carefully, considering intended use of the product, the aesthetics and functionality. *explain how product meets design criteria *reinforce and strengthen a 3D frame 	<ul style="list-style-type: none"> *refine product after testing, considering aesthetics, functionality and purpose *incorporate hydraulics and pneumatics *be confident to try new / different ideas *use cams, pulleys and gears to create movement 	<ul style="list-style-type: none"> *think about user's wants/needs and aesthetics when choosing textiles *make product attractive and strong *make a prototype *use a range of joining techniques *think about how product might be sold *think carefully about what would improve 	<ul style="list-style-type: none"> *understand a recipe can be adapted by adding / substituting ingredients *explain seasonality of foods *learn about food processing methods *name some types of food that are grown, reared or caught in the UK or wider world *adapt recipes to 	<ul style="list-style-type: none"> *use different types of circuit in product * think of ways in which adding a circuit would improve product * program a computer to monitor changes in environment and control product

			<p>product</p> <ul style="list-style-type: none">*understand that a single 3D textiles project can be made from a combination of fabric shapes.	<p>change appearance, taste, texture or aroma.</p> <ul style="list-style-type: none">*describe some of the different substances in food and drink, and how they can affect health*prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source.*use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.	
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