

Willow Lane Design & Technology Curriculum

Our intent

Through the teaching of design and technology at Willow Lane, we aim to create problem solvers, creators and producers. They will have the necessary skills and knowledge to understand how products are made, and the design process behind it. They also have some fundamental life skills from how to cook a nutritious meal, to how to trouble shoot and solve problems as they arise, to how to use emerging technology to design and create.

Children will be taught the knowledge of how to use different materials, how to cut and shape them for their own purposes using a variety of tools. They will learn how to create different mechanical and electrical systems. They will learn how to be healthy and to how create seasonal, affordable healthy snacks. We teach to the heart quite literally with this strong link of cooking skills woven throughout the curriculum. We also 'teach to the heart' by creating rich opportunities for our children to solve problems and to create, trial and evaluate solutions of their own.

At Willow Lane, you will see children experimenting with different ways of joining objects to create castles, monuments, and giant marble runs. You will see children using different mechanical and electrical systems to create space explorers, games and toys. You will see children learn how to sew to create puppets, covers, bags or stuffed toys. You will also see children preparing and making delicious and nutritious smoothies, snacks and meals. Children will also experience a range of local designers and producers and will learn how to present and showcase their work. Our children develop the aspirations, knowledge and skills to thrive and become shapers of tomorrow's world.

Our curriculum provides a detailed interpretation of the National Curriculum statements. We have adapted the guidance within the National Curriculum to meet the needs of the children at Willow Lane and created a broad and balanced curriculum. It provides opportunities for children to delve deeper and apply their knowledge in a wide range of contexts. Furthermore, we know our children learn more when they are provided with memorable experiences with which to anchor and link their learning. These experiences provide opportunities for rich discussion and enable children to develop their cultural capital and vocabulary.



Willow Lane
Community Primary School

Assessment in DT

How we assess

Each unit begins with a short introduction, which sets the scene for later learning. This is usually presented in the guise of a problem. Children are taught to empathise with the users, build up knowledge and necessary skills and then create ideas to solve the problem. They will evaluate their ideas in relation to the problem and select an idea to develop. Children may also prototype different ideas to help explore solutions. Finally children will have a product that can be judged on its success at solving the problem intended. Within each year, and usually within each unit children will look at an individual or invention or discovery that changed the world. Over the course of the unit, children learn the necessary technical language and foundational knowledge to help them communicate how they can solve problems.

Teachers use the 'I will know...' and 'I will know how to...' statements in each unit to assess whether children are achieving age related expectations. Teachers use formative assessment as an opportunity to identify strengths in the unit and plan opportunities to further deepen and broaden children's learning. It is also an opportunity to identify children and areas that require further consolidation and plan future learning episodes accordingly. The teaching sequence should be based on the stages of the design process, although there will have to be discrete lessons set aside for children to learn and practise certain skills, or to gain specific knowledge.

Unit outcomes allow teachers to identify those who are working towards unit expectations, those who are meeting the expectations for the unit and those who are working at greater depth within the unit. Outcomes may take the form of low-stakes testing, reports, presentations or other creative tasks that allow children to showcase their learning.

Children not meeting the expectations for a unit, or where gaps are identified, will be given further opportunities to revisit the foundational learning identified in each unit. This may be through regular retrieval tasks based on the 'Learning Checks' or through planned learning tasks designed to enable learners to revisit and apply earlier knowledge or skills in a new context.

The outcomes and 'Learning Checks' also support the subject lead in identifying strengths and areas for further development in the curriculum design and teaching and learning of history.

The overview of the progression in design and technology skills is shown on the next page. Key skills for each unit should be selected from the overview that meet the needs of each class. To assess children's historical enquiry skills, teachers observe the execution of skills that have been previously modelled and take note of those children who are not yet secure in using them. If children are not yet secure in the skills, further opportunities are planned in later learning episodes for children to revisit them. If children are secure in the skills, then opportunities to broaden the skills and apply them in new contexts are planned as appropriate.



Year group	Autumn		Spring		Summer	
EYFS: Red						
1. Orange	Enhancements: paper straw bridges, newspaper bridges, Investigate wheels and axels – simple junk model car		Make a fruit and veg smoothie and packaging Enhancements: Make a face with moving parts e.g. mouth with split pins, eyes on sliders		Make a mini-monument Enhancements: mini-gardens, poly-tunnel for seedlings, junk-model toy	
2. Yellow	Enhancements: make a model tourist attraction, make a model town/area, make a relief map		Make an exploration vehicle Enhancements: a slingshot rocket		Make puppets for a beach puppet show Enhancements: Make a paper windmill, fairground wheel, bunting	
3. Green	Enhancements: Make a story poster that uses magnets to move a character a long, Make a shadoof, electrostatic game, use different materials to make a pyramid		Make a moving monster Enhancements: mini houses from stone-age through to iron age		Make a healthy picnic wrap Enhancements: Cold frame for seedlings, paper straw Eden dome.	
4. Blue	Enhancements: flood defences, aqueduct, make a recycled castle, the invention of corners - joining two sides together		Make a Morse-code machine, Enhancements: slingshot car, pneumatic arm		Make a passport/phone/book holder (out of cotton)	
5. Indigo	Enhancements: Wartime rations – what could you make? Make-do and mend project		Make a marble run Enhancements: catapult, bridges, pavilion temple		Make a healthy meal	
6. Violet	Design a device to monitor your location (CAD) Enhancements: make an adventure map for a beebot		Enhancements: earth's crust model (with pneumatics/hydraulics)		Design and make an eco-product for the summer fair (Fairtrade, local, organic) I.e. a tote bag, a toy for children to play at the summer fair	

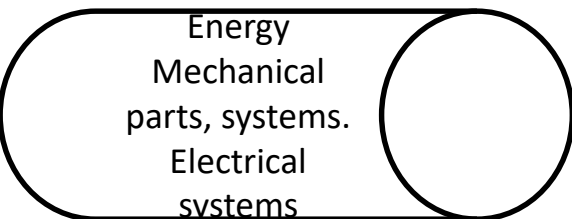
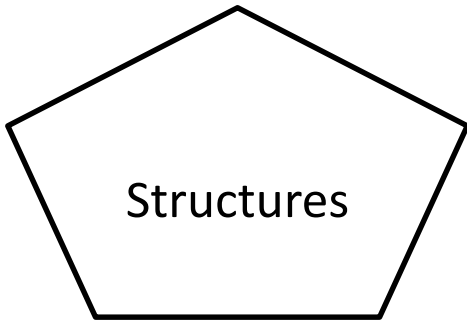
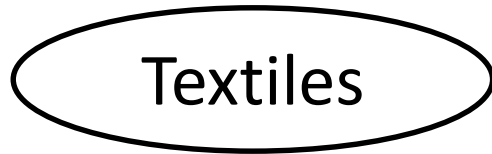
Knowledge and Skills

	Design	Make	Evaluate	Cooking and nutrition
	Throughout: understand how key events and individuals in design and technology have helped shape the world			
KS1 (age 5-7)	<p>(year 1) Generate success criteria as whole class</p> <p>(year 2) Select elements for own success criteria</p> <p>Have a clear purpose/function in mind when designing</p> <p>Design products that look appealing</p> <p>Have more than one design idea</p> <p>Talk about ideas</p> <p>Draw and label idea</p> <p>Use a template for a puppet</p> <p>Use ICT to design e.g. on sketch app</p> <p>Create a prototype/basic design e.g. simple junk model car</p>	<p>Use a range of tools e.g. scissors, needles, thimbles, needle threader, staplers, brushes for paint and glue, tape, split pins, pipe cleaners,</p> <p>Paper, paper straws, card, packages, tech card, wheels and rods for axels, felt, a range of materials/objects for finishing and decorating</p> <p>Knives, graters, chopping boards (blender with adult support)</p> <p>A wide selection of fruit and vegetables. and equipment</p> <p>Use additional material to reinforce structures</p>	<p>explore a range of existing products</p> <p>Evaluate in terms of fun, taste, appearance,</p> <p>Evaluate materials in terms of strength, flexibility, texture</p> <p>Evaluate shapes in terms of stability for structure (wide flat base = most stable)</p> <p>Evaluate their ideas and products against success criteria</p> <p>Decide which part of the success criteria is most important</p>	<p>Understand importance of food hygiene</p> <p>Know what healthy means</p> <p>Know where food comes from</p> <p>Know what part of the plant fruit and vegetables are</p> <p>Know that vitamins come from fruit and vegetables</p> <p>Cut soft fruit and vegetables</p> <p>Grate harder fruit/vegetables</p> <p>Combine ingredients</p>
Lower KS2 (age 7-9)	<p>Research context of problem</p> <p>Research other products</p> <p>Use research to develop design criteria</p> <p>Aim product at particular individuals or group</p> <p>Select from a combination of innovative (most challenging), functional, appealing points for their criteria.</p> <p>Explain their ideas, question others' ideas</p> <p>Develop ideas through annotated sketches</p> <p>Develop ideas through cross sectional diagrams</p> <p>Make prototypes e.g. out of card, or playdoh</p>	<p>Use a wider range of tools and equipment e.g. scissors to cut and score, craft knives, hacksaws, glue guns, hole punch, hand drills</p> <p>Use a wider range of materials, equipment e.g. different systems</p> <p>Know that cylinders are a strong supporting structure because they have no corners so support the weight evenly</p> <p>Know that corners are the weakest part of a structure</p> <p>Reinforce corners e.g. with right angled triangles</p> <p>Know that triangles are a strong shape because their corners spread the weight out more evenly</p> <p>Know that wide flat base, and low centre of gravity gives a strong structure</p> <p>Use pneumatics to create movement</p> <p>Use electrical systems e.g., circuits incorporating switches, lights and buzzers.</p>	<p>Investigate a range of products – test them out purposefully.</p> <p>Use investigations to create a range of questions about products to analyse further</p> <p>Analyse a range of products – e.g. what they're made from and why, what works well and what doesn't</p>	<p>understand and apply the principles of a healthy and varied diet when designing a snack</p> <p>Prepare and cook a snack (rolling and joining pastry, mixing, baking)</p> <p>Understand seasonality – use vegetables in season, preferably from allotments.</p> <p>Know how some ingredients are grown and processed.</p>
Upper KS2 (age 9-11)	<p>Research context of problem and need and users</p> <p>Generate a range of ideas and develop more than one idea more fully.</p> <p>Communicate ideas through talk, sketches and annotated exploded diagrams.</p> <p>Use prototypes to develop and evaluate ideas</p> <p>Use computer-aided design and computer-aided design</p>	<p>Apply more independence in their choice of materials and tools – judging things on their use, material properties, aesthetics, ethical credentials.</p> <p>Apply knowledge of how to strengthen, stiffen and reinforce structures</p> <p>Integrate mechanical systems in their products, e.g. pivots and axels in marble run, pneumatics in year 6 summer project</p> <p>apply their understanding of computing to program, monitor and control their products. (in partnership with a high school such as Grammar School)</p>	<p>Investigate and analyse products to create design criteria.</p> <p>Evaluate products against design criteria</p> <p>Evaluate own prototypes and products against design criteria</p> <p>Suggest & consider ways of improving designs of others and their own work.</p>	<p>Understand and apply principles of a healthy and varied diet when designing a healthy meal</p> <p>Know how ingredients are grown, reared and processed</p> <p>Know what fair trade means</p> <p>Know what organic means</p> <p>Know a basic sauce</p> <p>Adapt a recipe</p> <p>Build on previous cooking techniques e.g. use boiling, melting, sautéing, grilling</p>

Equipment, tools, materials progression for specific DT areas

	Cutting	Joining	Materials	Cooking	Systems
KS1	<p>Use scissors to cut paper and card</p> <p>Bend, fold, and tear materials</p> <p>Punch holes with pencil (using a rubber or something similar behind the pencil for safety)</p>	<p>Use PVA glue, glue sticks, adapted/own-made glue, playdoh, blutac,</p> <p>Use masking tape, celotape, sticky-back paper,</p> <p>Use staples</p> <p>Thread a needle</p> <p>Tie a knot</p> <p>Use running stitch</p> <p>Reinforce structure using additional materials</p> <p>Use tabs when joining card/paper</p> <p>Link materials together e.g. with pipe cleaners</p>	<p>Use variety of paper and card</p> <p>Use paper straws</p> <p>Use premade materials (e.g. junk modelling, tech card)</p> <p>Use felt</p> <p>Use cocktail sticks</p>	<p>Hold knife safely and effectively</p> <p>Cut ingredients using claw grip</p> <p>Grate ingredients safely</p>	<p>Use axels and wheels</p> <p>Use pivots, levers and linkages</p>
Lower KS2	<p>Use hole punch and hand drill where necessary to punch holes in stiffer materials</p> <p>use secateurs, wire cutters to cut stiffer materials</p> <p>Use a hacksaw to cut wood to length</p> <p>Use sandpaper to smooth</p>	<p>Develop above skills and...</p> <p>Use glue gun with adult support</p> <p>Use cross stitch</p> <p>Use appliqué</p> <p>Understand importance of seam allowance when joining textiles</p> <p>Use hammer and nails to join</p> <p>Use additional materials to provide support (e.g. right angle triangles to support corners, joining elements of structure together for additional support)</p>	<p>Use stiffer materials e.g. polystyrene, reinforced card,, plywood, doweling and strips of wood</p> <p>Use craft sticks</p> <p>Use another type of fabric other than felt (e.g. cotton, hessian, fabric off-cuts from somewhere like Standfast & Barracks)</p>	<p>As above and...</p> <p>Develop some cooking techniques e.g. folding when combing wet and dry ingredients, rolling and joining pastry, baking</p> <p>Use seasonings, toppings or bastes for additional taste/effect</p>	<p>Develop use of pivots and levers in products</p> <p>Use another type of mechanical system such as pneumatic system to create movement</p> <p>Use pulleys in Forest School</p> <p>Use electrical circuit with buzzer and/or light</p>
Upper KS2	<p>As above but with growing independence</p>	<p>As above but with growing independence</p> <p>If sewing:</p> <p style="padding-left: 40px;">use blanket stitch</p> <p style="padding-left: 40px;">Use backstitch</p>	<p>As above and...</p> <p>Use a 3D printer</p> <p>Use materials according to its properties, aesthetic qualities, ethical credentials</p>	<p>As above and...</p> <p>Adapt a recipe</p> <p>Develop cooking techniques, (e.g. melting and combining, sautéing, boiling, grilling)</p>	<p>Develop and apply understanding of potential energy to create movement, e.g. elastic, gravity</p> <p>Apply understanding of computing to program, monitor and control products (in partnership with another school such as Lancaster Grammar School)</p>

Timeline for individuals and events in design & technology



Key for the following page

Orange	Year 1
Yellow	Year 2
Light Green	Year 3
Light Blue	Year 4
Dark Blue	Year 5
Purple	Year 6

