



# Willow Tree Academy

## Design and Technology Statement of Intent

Purpose of study Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

### **Intent:**

At Willow Tree Academy, children receive a design and technology curriculum which allows them to exercise their creativity through designing and making. The children are taught to combine their designing and making skills with knowledge and understanding in order to design and make a product. Skills are taught progressively to ensure that all children are able to learn and practice in order to develop as they move through the school. Evaluation is an integral part of the design process and allows children to adapt and improve their product, this is a key skill which they need throughout their life. D&T allows children to apply the knowledge and skills learned in other subjects, particularly Maths, Science and Art. Children's interests are captured through theme learning, ensuring that links are made in a cross curricular way, giving children motivation and meaning for their learning. Children will learn basic cooking skills.

The national 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 knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users to critique,
- evaluate and test their ideas and products and the work of others to understand and apply the principles of nutrition and learn how to cook.

### **Implementation:**

We teach the National Curriculum, 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. All teaching of DT should follow the design, make and evaluate cycle. Each stage should be rooted in technical knowledge. The design process should be rooted in real life, relevant contexts to give meaning to learning. While making, children should be given choice and a range of tools to choose freely from. To evaluate, children should be able to evaluate their own products against a design criteria.



**Willow Tree Academy**

**Design and Technology Long Term Plan, 2021-2022**



	EYFS	Year 1 and 2 (Cycle 1)	Year 1 and 2 (Cycle 2)	Year 3	Year 4	Year 5	Year 6
<b>Design and evaluate</b>	Early learning goals to be taught and through continuous provision.	Investigate historic designs to find their strengths and weaknesses.  Design products that have a definite function for a particular person.  Make products to meet a basic design brief.	Design and make products, modifying the product as the project evolves.  Take an existing design and propose improvements  Explore the processes used to create products.	Produce designs with a clear purpose, having explored needs, packaging etc.  Select materials carefully to suit the intended design and use  Know the work of some recognised designers in all areas of study	Disassemble designs to discover how they work.  Make improvements to established designs and be able to explain why.  Refine methods and design as work progresses.  Use computer packages to design and model products.	Combine designs from several significant designers explaining the selections.  Design by considering the user, prioritising good function before profit.  Produce several prototypes each building upon the previous to optimise design	Produce a good quality finish to products using art techniques Start with existing designs and invent improved ones e.g. adapt methods, ingredients or times in a recipe. Include design processes such as prototypes, cross-sectional diagrams and CAD Evaluate the design of products and identify possible further changes to improve it performance
<b>Autumn term</b>	Early learning goals to be taught and through continuous provision.	<b>Food and Nutrition Design - Make - Evaluate</b> Select from and use ingredients according to their characteristics (e.g. healthy sandwich)	<b>Materials Design - Make - Evaluate</b> Demonstrate safe use of a given tool (e.g. saw)  Perform a range of cutting and shaping techniques (e.g. cutting, folding, curling)  Use a range of joining techniques (e.g. gluing, hinges or combining materials to strengthen)	<b>Construction Design - Make - Evaluate</b> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures E.g. Bird boxes/animal homes	<b>Mechanics Design - Make - Evaluate</b> Apply understanding of forces to select a suitable mechanism, e.g. levers, winding mechanism, pulleys and gears  E.g. Robin Hood gadget.	<b>Mechanisms/ Electronics Design - Make - Evaluate</b> Create circuits using electronics kits that combine a number of parts (e.g. LEDs, resistors, chips etc.)  Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages)  E.g. moving space buggy	<b>Electronics Design - Make - Evaluate</b> Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors)  E.g. Lighthouse Project

<b>Spring</b>	Early learning goals to be taught and through continuous provision.	<b>Construction Design - Make - Evaluate</b> Practice techniques to join on/for strengthen materials, e.g. gluing and reinforcing card.  Demonstrate safe use of a given tool (e.g. saw)  E.g. Heraldic Shield, Medieval Goblet	<b>Cooking &amp; Nutrition Design - Make - Evaluate</b> Use the basic principles of a healthy and varied diet to prepare dishes  Understand where food comes from.  Healthy eating dishes	<b>Cooking and Nutrition Design - Make - Evaluate</b> Use the correct utensils to hygienically prepare food  Understand where food comes from.  Use the basic principles of a healthy and varied diet to prepare dishes	<b>Materials Design - Make - Evaluate</b> Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities  Choose and use suitable cutting, shaping and joining techniques. E.g. Trash to Treasure Recycling	<b>Structures/ Construction Design - Make - Evaluate</b> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures Practice practical skills to a reasonable standard to produce products.  E.g. Tudor Houses	<b>Control Design - Make - Evaluate</b> Apply their understanding of computing to program, monitor and control their products.  E.g. blackout houses with working electric lights. Sensors to detect light/dark
<b>Summer</b>	Early learning goals to be taught and through continuous provision.	<b>Textiles Design - Make - Evaluate</b> Use a running stitch to join fabric.  Use methods such as dyeing, adding sequins or printing to alter the appearance of fabric.  Make use of templates to produce shapes.	<b>Mechanisms Design - Make - Evaluate</b> Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.  E.g. London Bus	<b>Textiles Design - Make - Evaluate</b> Use the correct stitch to join materials.  Add decorative finish using a suitable technique.  E.g. Victorian toy, sampler	<b>Electronics Design - Make - Evaluate</b> Construct series and parallel circuits (note at this stage, pupils DO NOT need to draw circuit diagrams)	<b>Textiles Design - Make - Evaluate</b> Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities  Use a variety of stitching techniques to join fabrics.  Understand the purpose of and include a seam allowance.	<b>Cooking and Nutrition Design - Make - Evaluate</b> Understand and apply the principles of a healthy and varied diet Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. Understand how to store and handle food ingredients properly.  E.g. VE day party

							<b>Mechanisms (Pneumatics) Design - Make - Evaluate</b> Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages) Combine electronics and mechanisms to produce original designs.  e.g. STEM model of circulatory stems.
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**Impact:**

What will this look like?

By the time children leave Willow Tree Academy:

- 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.