Twin Oaks
Primary School

Design and Technology curriculum and progression framework

National Curriculum

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.

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;
- critique, evaluate and test their ideas and products and the work of others;
- understand and apply the principles of nutrition and learn how to cook.

At Twin Oaks, we use the guidance from the national curriculum to structure our Design and Technology learning. Set out below we have broken down the objectives into key skills and knowledge which are taught throughout each year. The skills and knowledge

progress in difficulty year upon year and gives teachers and leaders a clear view of where the children have come from and where the children need to get to in their D&T learning. Where possible, we encourage our teachers to provide the children with opportunities to research and study the work of engineers, inventors and architects from a diverse range of backgrounds. We also encourage, where possible, teachers to plan for the use of other STEM subjects (science, technology, engineering and maths) when teaching a DT project so that children have the opportunity to experience how these subjects are interlinked within an ever changing, technological world.

Year group	Design	Make	Evaluate	Technical knowledge	Cooking and nutrition
R	*Explore different materials freely, 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.	*Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. *Join different materials and explore different textures *Uses tools for a purpose	*Are able to ask simple questions about products. *Ask for help when making their product *Be able to share their creation and talk about the process.	*Use glue, masking tape, celotape etc top join materials together	*Eats a healthy range of foodstuffs and understands need for variety in food *Describes a range of different food textures and tastes when cooking and notices changes when they are combined or exposed to hot and cold temperatures
1	*Create a simple design for a product *Use pictures and words to describe what they want to do	*Select from and use a range of tools and equipment to perform practical tasks, e.g. cutting, shaping, joining and finishing *Use a range of tools to cut, join and combine materials and components safely e.g. scissors, glue, masking tape blu tac etc.	*Ask simple questions about existing products and those that they have made *Discuss the process they used to make their product	*Build structures, exploring how they can be made stronger, stiffer and more stable **Link to Science - materials** *Use wheels and axles in a product	*Talk about what they eat at home and begin to discuss what healthy foods are *Say where some food comes from and give examples of food that is grown

					*Use simple tools with help to prepare food safely
2	*Design purposeful, functional, appealing products for themselves and other users based on product criteria *Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology	*Choose appropriate tools, equipment, techniques and materials from a wide *Safely measure, mark out, cut and shape materials and components using a range of tools	*Evaluate and assess existing products and those that they have made using design criteria and discuss problems they encountered when making their product *investigate different techniques for stiffening a variety of materials and explore different methods of enabling structures to remain stable	*Explore and use mechanisms in their device e.g. levers, sliders Mechanism-a device used to create movement in a product. Lever-a rigid bar (card strip) which moves around a pivot (paper fastener). Slider-a rigid bar which moves backwards and forwards along a straight line. Unlike a lever, a slider does not have a pivot point. Chassis-the frame or base on which the vehicle is built.	*Understand the needs for a variety of food in a diet *Understand that food has to grown, farmed or caught *Use a wider range of cookery techniques to prepare food safely
3	*Use knowledge of existing products to design a *Create designs using annotated sketches, cross-sectional diagrams and simple computer programs	*Safely measure, mark out assemble and join with some accuracy *Make suitable choices from a wider range of tools and unfamiliar materials and plan out the main stages of using them	*Investigate and analyse existing products and those they have made, considering a wide range of factors *identify problems they encountered when making their product	*Strengthen frames using diagonal struts *Understand how mechanical systems such as levers and linkages or pneumatic systems create movement **Technical Knowledge** **Lever-something that turns a pivot**	*Talk about different food groups and name some foods from each group *Know that food has to be grown farmed and caught from Europe and the wider world *begin to read and understand food labelling *Use a wider range of ingredients to prepare and combine ingredients safely

				Linkage-a system of levers that is connected by a pivot **Pneumatics-air pressure can control and move an object**	
4	*Use knowledge of existing products to design a functional and appealing product for a particular purpose and audience *create designs using exploded diagrams **NB Exploded diagram - shows order of assembly and the design from different angles:**	*Use techniques which require more accuracy to cut, shape, join and finish their work e.g. cutting internal shapes, slots in *Use their knowledge of functional and aesthetic qualities of a wide range of materials to plan how to use them	*Consider how existing products and their own finished products might be improved and how they meet the needs of their intended user *Identify problems they encountered when making their product and steps they took to over come these	*Apply techniques learn to strengthen structures and explore their own ideas *Understand and use electrical systems in products (link to science circuits) NB Technical Knowledge Strengthening techniques: diagonal struts, pipe leaners, flute join and rolling paper.	*Understand what makes a healthy and balanced diet, and that different foods and drinks provide different substances the body needs to be healthy and active *Understand seasonality and the advantages of eating seasonal and locally *Read and follow recipes which involve several processes, skills and techniques
5	*esearch into existing products and use their market research to inform the design of their innovative product *Create prototypes to show their ideas *Produce step by step plans to guide their making,	*precise measurements so that joins, holes and openings are in exactly the right place	*Make detailed evaluations of their own and existing products, considering the views of others to improve their work *Identify problems they encountered when making their product and steps they took to overcome these and how they could have done things differently	*Build more complex 3D structures and apply their knowledge of strengthening techniques to make them stronger or more stable *understand how to use more mechanical and electrical systems in their owkr	*Understand the main food groups and the different nutrients that are important for health *Understand how a variety of ingredients are grown, reared, caught and processed to make

	demonstrating that they can apply their knowledge of different materials, tools and techniques				them safe and palatable/ tasty for eating *Select appropriate ingredients and use a wide range of techniques to combine them
6	*Use Research they have done into famous designers and inventors to inform the design of their own product *Generate, develop, model and communicate ideas through discussion, annotated sketches, cross- sectional and exploded pattern pieces and computer-aided design diagrams, prototypes,	*Apply their knowledge of materials and techniques to refine and rework their *Test and troubleshoot. product to improve its functional properties and aesthetic qualities *Use technical knowledge and accurate skills to problem solve during the making process Uuse their knowledge of famous designs to further explain the effectiveness of products and the products they have made		*Use a wide range of methods to strengthen, stiffen and reinforce complex structures and can use them accurately and appropriately *Apply their understanding of computing to program, monitor and control their product (link to computing and coding)	*Plan a selection of healthy meals based on the principles of a healthy and varied diet *Use information on food labels to inform choices *research, plan and prepare and cook a savoury dish applying their knowledge pf ingredients and their technical skills