BROOK COMMUNITY PRIMARY SCHOOL

Our Design and Technology Curriculum

Intention:

Our vision for D&T is:

For all our pupils to experience and learn a range of techniques for designing and making across the three aspects of D&T: Cooking and Nutrition, Mechanisms and Electrics and Structures.

For all our pupils to develop key skills through their D&T learning – such as critical thinking, problem-solving, collaboration, fine motor skills and research.

For all our pupils to enjoy their D&T learning and continue this enjoyment through to secondary school and beyond.

Implementation:

Every year, each class will study three aspects of D&T: ***Cooking and Nutrition, Mechanisms and Electrics and Structures***. For cooking and nutrition, links have been made to TV chefs and cooks to inspire pupils with current cooking techniques and ideas as well as a focus on different aspects of cooking – flavour, baking, balance and perfection. The skills involved will progress over the Key Stages.

The Structure themes have been sequenced to progress in difficulty, as have the mechanisms and electrics. Structures have been linked to local, national and worldwide Structures. These links may change depending on Humanities topics and cohort needs.

Each aspect has been mapped out over the course of a 2-year cycle, linking to **'echoes and ripples'** (looking at prior learning and future learning). This provides pupils with not only skills and techniques in D&T, but how these skills and areas of D&T link.

For each D&T unit, including cooking, pupils will follow the process of: ***Research, design, practise techniques, choose tools, make and evaluate***.

In **Early Years,** pupils follow the Development Matters curriculum, but specific objectives will be taught to prepare pupils for the KS1 Brook curriculum, ensuring they enter KS1 ready for the next stage in learning.

Impact:

Our pupils experience a range of aspects of D&T, gaining a good understanding of the breadth of this subject. Pupil's engage in plenty of hands-on, practical learning as well as developing their skills in research, design and evaluation.

Our pupils understand how their learning gin D&T contributes to a vast range of other sills in other subjects as well as the skills required for many future careers.

Design & Technology Curriculum Map

	D&T within EYFS:	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
EYFS	**Physical Development: Fine Motor Skills**	Use one-handed tools and equipment, i.e., making snips in paper with scissors.	Develop their small motor skills so that they can use a range of tools competently, safely and confidently.			Use a range of small tools, including scissors, paint brushes and cutlery. Begin to show accuracy and care when drawing	
	Expressive Arts and Design: Creating with Materials	Make imaginative and complex 'small worlds' with blocks and construction kits.		Develop own ideas and decide which materials to use to express them. Join different materials and explore different textures	Create collaboratively sharing ideas, resources and skills.	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used;	
	Design & Technology specific learning	Know that food can be grown or farmed and some food is produced in a factory Understand that some foods should be eaten in small amounts and others can be eaten in larger amounts.			Know that buildings and bridges have been designed to be strong and safe Engage with mechanisms, such as within pop-up books, toy vehicles etc.		

			Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Class	**Objectives throughout the year**	**Cycle**	**Skills, techniques and objectives**					
SAPLINGS – Yr1&2	➢ I can create a simple design for my product. ➢ I can use pictures and words to describe what I want to do ➢ I can ask simple questions about existing products and those that I have made. ➢ I can design useful, pleasing products for myself and other users based on a design brief ➢ I can evaluate and assess existing products and those that I have made using a design criteria. ➢	**Odd**	**Mechanisms:** Levers and Sliders, moving pictures ➢ I can select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing. ➢ I can use a range of simple tools to cut, join and combine materials and components safely ➢ I can explore and use mechanisms such as levers, wheels and axles in products. ➢ I can use sliders in a product. ➢ I can explore and use mechanisms such as levers, wheels and axles in products. ➢ I can generate, develop, model and communicate my ideas through talking, drawing, templates, mock-ups and IT. ➢ I can safely measure, mark out, cut and shape materials and components using a range of tools	**Structures:** Towers – Big Ben, Tower of London ➢ I can build structures, exploring how they I can be made stronger, stiffer and more stable. ➢ I can select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing. ➢ I can use a range of simple tools to cut, join and combine materials and components safely ➢ I can generate, develop, model and communicate my ideas through talking, drawing, templates, mock-ups and IT. ➢ I can choose tools I would like to use and select materials based on my knowledge of their properties.	**Cooking and Nutrition:** Jamie Oliver and cooking with plants ➢ I can say where some food comes from and give examples of food that is grown. ➢ I can use simple tools with help to prepare food safely I ➢ can understand the need for a variety of food in a diet. ➢ I can understand that all food has to be farmed, grown or caught. ➢ I can use a wider range of cookery techniques to prepare food safely.			

		Even	**Cooking and Nutrition:** Nadia Hussain and celebration food	**Mechanisms:** Wheels and Axels	**Structures:** Bridges – Wye Railway Bridges, Bridges around the UK
			➢ I can talk about what I eat at home and begin to discuss what healthy foods are. ➢ can use simple tools with help to prepare food safely	➢ I can use wheels and axles in a product. ➢ I can select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing. ➢ I can use a range of simple tools to cut, join and combine materials and components safely	➢ I can build structures, exploring how they I can be made stronger, stiffer and more stable. ➢ I can select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing. ➢ I can use a range of simple tools to cut, join and combine materials and components safely ➢ I can investigate different techniques for stiffening a variety of materials and explore different methods of enabling structures to remain stable.
YOUNG OAKS – Yr3&4	➢ I can use my knowledge of existing products to design a functional and appealing product for a particular purpose and audience. ➢ I can create designs using exploded diagrams ➢ I can make suitable choices from a wider range of tools and unfamiliar materials and plan out the main stages of using them. ➢ I can use my knowledge of techniques and the functional and aesthetic qualities of a wide range of materials to plan how to use them.	**Odd**	**Cooking and Nutrition:** Gino D'Campo and Flavour (Mediterranean)	**Structures:** Buildings – 3D around the world (e.g. pyramids)	**Mechanisms:** Linkages and electrical systems, circuits within mechanisms
			➢ I can understand that food has to be grown, farmed or caught in Europe and the wider world. ➢ I can 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 ➢ I can use a wider variety of ingredients and techniques to prepare and combine ingredients safely. ➢ I can read and follow recipes which involve several processes, skills and techniques	➢ I can apply techniques I have learnt to strengthen structures and explore my own ideas. ➢ I can strengthen frames with diagonal struts. ➢ I can create designs using annotated sketches, cross-sectional diagrams and simple computer programmes I can use techniques which require more accuracy to cut, shape, join and finish my work e.g. Cutting internal shapes, slots.	➢ I can understand and use electrical systems in my products. ➢ I can understand how mechanical systems such as sliders, levers and linkages create movement. ➢ I can create designs using annotated sketches, cross-sectional diagrams and simple computer programmes ➢ I can use techniques which require more accuracy to cut, shape, join and finish my work e.g. Cutting internal shapes, slots
		Even	**Cooking and Nutrition:** Mary Berry, changes of state	**Mechanisms:** Pneumatics (forces)	**Structures:** Tunnels – Train line, channel tunnel, types of tunnels, tunnels under water
			➢ I can understand seasonality and the advantages of eating seasonal and locally produced food ➢ I can talk about the different food groups and name food from each group.	➢ I can understand how mechanical systems such as pneumatic systems create movement ➢ I can create designs using annotated sketches, cross-sectional diagrams and simple computer programmes	➢ I can apply techniques I have learnt to strengthen structures and explore my own ideas. ➢ I can strengthen frames with diagonal struts.

	➢ I can investigate and analyse existing products and those I have made, considering a wide range of factors. ➢ I can consider how existing products and my own finished products might be improved and how well they meet the needs of the intended user.		➢ I can use a wider variety of ingredients and techniques to prepare and combine ingredients safely. I can read and follow recipes which involve several processes, skills and techniques	➢ I can safely measure, mark out, cut, assemble and join with some accuracy	➢ I can create designs using annotated sketches, cross-sectional diagrams and simple computer programmes ➢ I can safely measure, mark out, cut, assemble and join with some accuracy ➢
MIGHTY OAKS – Yr 5&6	➢ I can use my research into existing products and my market research to inform the design of my own innovative product. ➢ I can generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design ➢ I can apply my knowledge of materials and techniques to refine and rework my product to improve its functional properties and aesthetic qualities. ➢ I can use my technical knowledge and accurate	**Odd**	**Cooking and Nutrition:** Gordon Ramsey – cooking chemistry	**Structures:** Architecture – British buildings	**Mechanisms:** Cams and Electrics, forces
			➢ I can research, plan and prepare and cook a savoury dish, applying my knowledge of ingredients and my technical skills ➢ I can select appropriate ingredients and use a wide range of techniques to combine them. ➢ I can understand how a variety of ingredients are grown, reared, caught and processed to make them safe and palatable / tasty to eat. ➢	➢ I can build more complex 3D structures and apply my knowledge of strengthening techniques to make them stronger or more stable. ➢ I can use research I have done into famous designers and inventors to inform my designs ➢ I can use my knowledge of famous designs to further explain the effectiveness of existing products and products I have made.	➢ I can understand how to use more complex mechanical and electrical systems. ➢ I can make careful and precise measurements so that joins, holes and openings are in exactly the right place. ➢ I can create prototypes to show my ideas.
		Even	**Cooking and Nutrition:** Paul Hollywood and Bread, digestion, food for muscles and nutrition	**Mechanisms:** Computer programming mechanics	**Structures:** Shelters – WW2 Kent
			➢ I can understand the main food groups and the different nutrients that are important for health ➢ I can use information on food labels to inform choice.	➢ I can apply my understanding of computing to program, monitor and control my products ➢ I can produce step by step plans to guide my making, demonstrating that I can apply my knowledge of different materials, tools and techniques.	➢ I can use a wide range of methods to strengthen, stiffen and reinforce complex structures and I can use them accurately and appropriately.

	skills to problem solve during the making process. ➢ I can make detailed evaluations about existing products and my own considering the views of others to improve my work.		➢ I can confidently plan a series of healthy meals based on the principles of a healthy and varied diet I can select appropriate ingredients and use a wide range of techniques to combine them.		

Skills and Knowledge Progression Sequence

	EYFS	Year 1 and 2 (over 2-years)	Year 3 and 4 (over 2-years)	Year 5 and 6 (over 2-years)
Vocabulary	➢ Move ➢ Work together ➢ Share ➢ work ➢ Build ➢ Make ➢ Choose ➢ Creation	➢ Design ➢ Tools ➢ Equipment ➢ Cut ➢ Join ➢ Combine ➢ Wheels and axels ➢ Design brief/ criteria ➢ Template ➢ Materials ➢ Evaluate ➢ Mechanism ➢ Structure ➢ Levers	➢ Balanced ➢ Substances ➢ Seasonality ➢ Processes ➢ Strengthen ➢ Linkages ➢ Pneumatic system	➢ Innovation ➢ Nutrients ➢ Palatable ➢ Reinforce ➢ Prototype ➢ Architecture ➢ Precise
Cooking and Nutrition	➢ I know that food has to be prepared and/or cooked ➢ I can tell you about favourite foods ➢ I know where some food comes from	➢ I can talk about what I eat at home and begin to discuss what healthy foods are. ➢ I can say where some food comes from and give examples of food that is grown.	➢ I can talk about the different food groups and name food from each group. ➢ I can understand that food has to be grown, farmed or caught in Europe and the wider world.	➢ I can understand the main food groups and the different nutrients that are important for health ➢ I can understand how a variety of ingredients are grown, reared, caught

		➢ I can understand the need for a variety of food in a diet. ➢ I can understand that all food has to be farmed, grown or caught.	➢ I can 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 ➢ I can understand seasonality and the advantages of eating seasonal and locally produced food	and processed to make them safe and palatable / tasty to eat. ➢ I can use information on food labels to inform choice.
		➢ I can use simple tools with help to prepare food safely ➢ I can use a wider range of cookery techniques to prepare food safely.	➢ I can use a wider variety of ingredients and techniques to prepare and combine ingredients safely. ➢ I can read and follow recipes which involve several processes, skills and techniques	➢ I can confidently plan a series of healthy meals based on the principles of a healthy and varied diet ➢ I can select appropriate ingredients and use a wide range of techniques to combine them. ➢ I can research, plan and prepare and cook a savoury dish, applying my knowledge of ingredients and my technical skills
Structures	➢ Collaborate with others to manage large items, such as moving a long plank safely, carrying large hollow blocks. ➢ Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park.	➢ I can build structures, exploring how they I can be made stronger, stiffer and more stable. ➢ I can investigate different techniques for stiffening a variety of materials and explore different methods of enabling structures to remain stable.	➢ I can apply techniques I have learnt to strengthen structures and explore my own ideas. ➢ I can strengthen frames with diagonal struts.	➢ I can build more complex 3D structures and apply my knowledge of strengthening techniques to make them stronger or more stable. ➢ I can use a wide range of methods to strengthen, stiffen and reinforce complex structures and I can use them accurately and appropriately.
Mechanisms	➢ Explore how things work.	➢ I can use wheels and axles in a product. ➢ I can explore and use mechanisms such as levers, wheels and axles in products.	➢ I can understand how mechanical systems such as sliders, levers and linkages or pneumatic systems create movement. ➢ I can understand and use electrical systems in my products.	➢ I can understand how to use more complex mechanical and electrical systems. ➢ I can apply my understanding of computing to program, monitor and control my products
Design and Research	➢ Explore collections of materials with similar and/or different properties ➢ Explore different materials freely, to develop their ideas about how to use them and what to make.	➢ I can create a simple design for my product. ➢ I can use pictures and words to describe what I want to do	➢ I can create designs using annotated sketches, cross-sectional diagrams and simple computer programmes ➢ I can use my knowledge of existing products to design a functional and	➢ I can generate, develop, model and communicate my ideas through discussion, annotated sketches, cross-sectional and exploded diagrams,

		➢ I can design useful, pleasing products for myself and other users based on a design brief ➢ I can generate, develop, model and communicate my ideas through talking, drawing, templates, mock-ups and IT.	appealing product for a particular purpose and audience. ➢ I can create designs using exploded diagrams	prototypes, pattern pieces and computer-aided design ➢ I can use my research into existing products and my market research to inform the design of my own innovative product. ➢ I can create prototypes to show my ideas. ➢ I can use research I have done into famous designers and inventors to inform my designs
Tools and techniques	➢ Use one-handed tools and equipment, for example, making snips in paper with scissors ➢ Join different materials and explore different textures. ➢ Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons	➢ I can select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping, joining and finishing. ➢ I can use a range of simple tools to cut, join and combine materials and components safely ➢ I can choose tools I would like to use and select materials based on my knowledge of their properties. ➢ I can safely measure, mark out, cut and shape materials and components using a range of tools	➢ I can safely measure, mark out, cut, assemble and join with some accuracy ➢ I can make suitable choices from a wider range of tools and unfamiliar materials and plan out the main stages of using them. ➢ I can use techniques which require more accuracy to cut, shape, join and finish my work e.g. Cutting internal shapes, slots. ➢ I can use my knowledge of techniques and the functional and aesthetic qualities of a wide range of materials to plan how to use them.	➢ I can make careful and precise measurements so that joins, holes and openings are in exactly the right place. ➢ I can produce step by step plans to guide my making, demonstrating that I I can apply my knowledge of different materials, tools and techniques. ➢ I can apply my knowledge of materials and techniques to refine and rework my product to improve its functional properties and aesthetic qualities. ➢ I can use my technical knowledge and accurate skills to problem solve during the making process.
Evaluation	➢ Return to and build on their previous learning, refining ideas and developing their ability to represent them.	➢ I can ask simple questions about existing products and those that I have made. ➢ I can evaluate and assess existing products and those that I have made using a design criteria.	➢ I can investigate and analyse existing products and those I have made, considering a wide range of factors. ➢ I can consider how existing products and my own finished products might be improved and how well they meet the needs of the intended user.	➢ I can make detailed evaluations about existing products and my own considering the views of others to improve my work. ➢ I can use my knowledge of famous designs to further explain the effectiveness of existing products and products I have made.
End of Key Stage NC end points	**ELGs:**	➢ **I can design purposeful, functional, appealing products based on design criteria**	➢ **I can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups**	

	➢ **Use a range of small tools, including scissors, paint brushes and cutlery** ➢ **Begin to show accuracy and care when drawing** ➢ **Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function** ➢ **Share their creations, explaining the process they have used** ➢ **Make use of props and materials when role playing characters in narratives and stories**	➢ **I can generate, develop, model and communicate ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology** ➢ **I can select from and use a range of tools and equipment to perform practical tasks** ➢ **I can select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics** ➢ **I can explore and evaluate a range of existing products** ➢ **I can evaluate ideas and products against design criteria** ➢ **I can build structures, exploring how they can be made stronger, stiffer and more stable** ➢ **I can explore and use mechanisms** ➢ **I can use the basic principles of a healthy and varied diet to prepare dishes** ➢ **I understand where food comes from.** ➢	➢ **I can generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design** ➢ **I can select from and use a wider range of tools and equipment to perform practical tasks accurately** ➢ **I can 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** ➢ **I can investigate and analyse a range of existing products** ➢ **I can evaluate ideas and products against my own design criteria and consider the views of others to improve my work** ➢ **I can understand how key events and individuals in design and technology have helped shape the world** ➢ **I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures** ➢ **I understand and use mechanical systems in my products [for example, gears, pulleys, cams, levers and linkages]** ➢ **I understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]** ➢ **I can apply my understanding of computing to program, monitor and control my products.** ➢ **I understand and apply the principles of a healthy and varied diet** ➢ **I can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques** ➢ **I understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.**