Design & Technology

During each key stage pupils complete projects focused on an area of design & technology as part of their curriculum. The projects are organised in a three-year cycle in KS1 and a four-year cycle in KS2. Pupils learn specific knowledge in each project and deepen their understanding across each key stage, including the use of key concepts.

National Curriculum Aims

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

Key Concepts

During each design & technology project pupils explore the following key concepts:

- Pupils learn about the design, make and evaluate process

KS1 Specific knowledge within the projects

Year A	**Toys (Mechanism)**	**Healthy Lunch Box (Cooking and nutrition)**
	Pupils learn how to design, make and evaluate a toy which moves, including how to use levers and sliders. Pupils learn how to use textiles.	Pupils learn how to design, make and evaluate healthy dishes for a packed lunch box. Pupils learn where food for the healthy lunch box comes from.
Year B	**Landing on the Moon (Mechanism)**	**For my garden (Structures)**
	Pupils learn how to design, make and evaluate a vehicle to move around on the moon, including how to use wheels and axles.	Pupils learn about how to design, make and evaluate a structure for the woodland school. Pupils learn how to strengthen the structure to make it stable.
Year C	**Dover Castle (Structure)**	**Cook it! (Cooking and nutrition)**
	Pupils learn how to design, make and evaluate a model of an aspect of Dover Castle. Pupils learn to strengthen the model to make it stable.	Pupils learn how to design, make and evaluate cooked food following and improving on a recipe. Pupils learn where ingredients come from.

KS2 Specific knowledge within the projects

Year A	**Make it! (Structures)**	**France (Cooking and nutrition)**
	Pupils learn how to design, make and evaluate a structure that can be used in the home. Pupils learn how to make the model stable.	Pupils learn how to design, make and evaluate seasonal healthy food from France.

Year B	**Move it!** **(Mechanisms)**	**Roman Britain** **(Structures)**
	Pupils learn how to design, make and evaluate a mechanism that uses gears, pulleys and levers that can be used for leisure.	Pupils learn how to design, make and evaluate a model of an aspect of a Roman building. Pupils learn how to make the model stable.
Year C	**Power it!** **(Electrical Systems)**	**Ancient Egypt** **(Mechanisms)**
	Pupils learn how to design, make and evaluate an electrical system that uses bulbs or buzzers to entertain.	Pupils learn how to design, make and evaluate a mechanism that uses gears, pulleys and levers to demonstrate how Egyptians used technology.
Year D	**Program it!** **(Computing to program)**	**Around the globe** **(Cooking and nutrition)**
	Pupils learn how to design, make and evaluate a product that uses a computing within part of the design.	Pupils learn how to design, make and evaluate food which has been improvised on from food around the world.

Deepening Understanding

When learning during the design & technology projects pupils will deepen their knowledge in:

- creative approaches to solving problems, including taking risks
- skills required to design and make products
- Working collaboratively to enhance their and other peoples work

Year Group Learning Expectations

KS1

Year A	**Toys** **(Mechanism)**	**Healthy Food** **(Cooking and nutrition)**
	• design a product which moves • make a product which moves • join materials and components in different ways • explain why they have chosen specific textiles	• cut food safely • weigh ingredients to use in a recipe • describe the ingredients used when making a dish or cake
Year B	**Landing on the Moon** **(Mechanism)**	**For my garden** **(Structures)**
	• design a product which moves • make a product which moves • join materials and components in different ways • use wheels and axles, when appropriate to do so	• make their own model stronger • join materials and components in different ways • make a model stronger and more stable
Year C	**Dover Castle** **(Structure)**	**Cook it!** **(Cooking and nutrition)**

	• make their own model stronger • join materials and components in different ways • make a model stronger and more stable	• cut food safely • weigh ingredients to use in a recipe • describe the ingredients used when making a dish or cake
KS2		
Year A	**Make it! (Structures)**	**France (Cooking and nutrition)**
	• know how to strengthen a product by stiffening a given part or reinforce a part of the structure • use knowledge to improve a made product by strengthening, stiffening or reinforcing	• follow a given recipe to create a dish • understand the difference between a savoury and sweet dish • talk about which food is healthy and which food is not • know which season various foods are available for harvesting
Year B	**Move it! (Mechanisms)**	**Victorians (Structures)**
	• links scientific knowledge to design by using pulleys or gears • make a product that relies on pulleys or gears	• know how to strengthen a product by stiffening a given part or reinforce a part of the structure • use knowledge to improve a made product by strengthening, stiffening or reinforcing
Year C	**Power it! (Electrical Systems)**	**Ancient Egypt (Mechanisms)**
	• make a product which uses both electrical and mechanical components • links scientific knowledge by using lights, switches or buzzers	• links scientific knowledge to design by using pulleys or gears • make a product that relies on pulleys or gears
Year D	**Program it! (Computing to program)**	**Around the globe (Cooking and nutrition)**
	• use IT, where appropriate, to add to the quality of the product	• describe how food ingredients come together • bring a creative element to the food product being designed
Year 1	• use own ideas to design something and describe how their own idea works • explain to someone else how they want to make their product and make a simple plan before making • use own ideas to make something • choose appropriate resources and tools • describe how something works • explain what works well and not so well in the model they have made • know how to work safely when making and how to be hygienic when cooking	
Year 2	• think of an idea and plan what to do next • choose tools and materials and explain why they have chosen them • measure materials to use in a model or structure	

	• explain what went well with their work • know how to work safely when making and how to be hygienic when cooking
Year 3	• prove that a design meets a set criteria. • design a product and make sure that it looks attractive • choose a material for both its suitability and its appearance • follow a step-by-step plan, choosing the right equipment and materials • select the most appropriate tools and techniques for a given task • work accurately to measure, make cuts and make holes • explain how to improve a finished model • know why a model has, or has not, been successful • know how to work safely when making and how to be hygienic when cooking
Year 4	• use ideas from other people when designing • produce a plan and explain it • persevere and adapt work when original ideas do not work • communicate ideas in a range of ways, including by sketches and drawings which are annotated • know which tools to use for a particular task and show knowledge of handling the tool • know which material is likely to give the best outcome • measure accurately • evaluate and suggest improvements for design • evaluate products for both their purpose and appearance • explain how the original design has been improved • present a product in an interesting way • know how to work safely when making and how to be hygienic when cooking
Year 5	• come up with a range of ideas after collecting information from different sources • produce a detailed, step-by-step plan • explain how a product will appeal to a specific audience • use a range of tools and equipment competently • make a prototype before making a final version • suggest alternative plans; outlining the positive features and draw backs • evaluate appearance and function against original criteria • know how to work safely when making and how to be hygienic when cooking
Year 6	• use market research to inform plans and ideas. • follow and refine original plans • justify planning in a convincing way • show that culture and society is considered in plans and designs • know which tool to use for a specific practical task • know how to use any tool correctly and safely • know what each tool is used for • explain why a specific tool is best for a specific action • know how to test and evaluate designed products • explain how products should be stored and give reasons • evaluate product against clear criteria • know how to work safely when making and how to be hygienic when cooking