Design Technology Overview

Design & Technology - NC

Purpose of Study	Aims
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.

KS 1 DT- Breadth

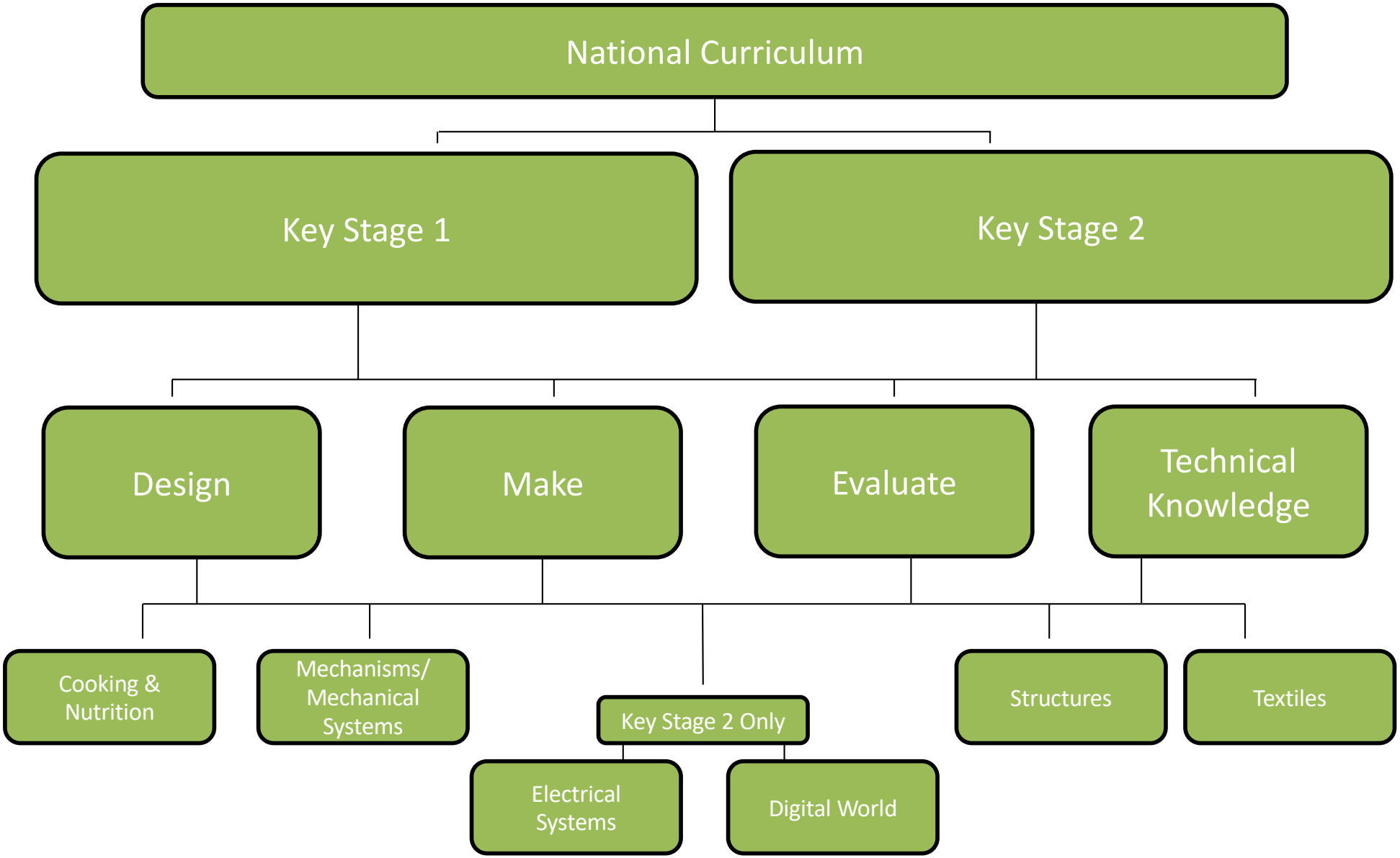
Key Stage 1			
Design	**Make**	**Evaluate**	**Technical Knowledge**
• design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] • select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	• explore and evaluate a range of existing products • evaluate their ideas and products against design criteria	• build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

KS 2 DT- Breadth

Key Stage 2			
Design	**Make**	**Evaluate**	**Technical Knowledge**
• 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 • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	• select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • 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	• investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world	• apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products

Cooking & Nutrition Breadth

Key Stage 1	Key Stage 2
• use the basic principles of a healthy and varied diet to prepare dishes • understand where food comes from	• 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


National Curriculum
Key Stage 1
Key Stage 2
Design
Make
Evaluate
Technical Knowledge
Cooking & Nutrition
Mechanisms/ Mechanical Systems
Key Stage 2 Only
Electrical Systems
Digital World
Structures
Textiles

DT Topics

1	2	3	4	5	6
Cooking and Nutrition Smoothies	**Cooking and Nutrition** Balanced diet	**Cooking and Nutrition** Eating seasonally	**Cooking and Nutrition** Adapting recipes	**Cooking and Nutrition** Developing a recipe	**Cooking and Nutrition** Come dine with me
Structures Constructing a windmill	**Structures** Baby Bear's chair	**Structures** Constructing a castle	**Structures** Pavilions		**Structures** Playgrounds
Mechanisms Moving story book	**Mechanisms** Fairgound wheel Moving Monsters	**Mechanical Systems** Pneumatic toys	**Mechanical Systems** Making a slingshot car	**Mechanical Systems** Making a pop-up book	
Textiles Puppets		**Textiles** Cross stitch and applique	**Textiles** Fastenings		**Textiles** Waistcoats
		Digital World Wearable technology			**Digital World** Navigating the world
			Electrical Systems Torches	**Electrical Systems** Doodlers	

Year 1	Year 2
Structures: Constructing windmills Construct a windmill to complete a request from a user. Develop an understanding of different types of windmill, how they work and their key features. Begin to use technical skills such as making evenly spaced cuts and adding weight to ensure a successful structure.	**Mechanisms: Making a moving monster** After learning the terms; pivot, lever and linkage, children design a monster which will move using a linkage mechanism. Children practise making linkages of different types and varying the materials they use to bring their monsters to life.
Textiles: Puppets Exploring different ways of joining fabrics before creating their own hand puppets based upon characters from a well-known fairytale. Children work to develop their technical skills of cutting, glueing, stapling and pinning.	**Structures: Baby bear's chair** Using the tale of Goldilocks and the Three Bears as inspiration, children help Baby Bear by making him a brand new chair. When designing the chair, they consider his needs and what he likes and explore ways of building it so that it is strong.
Cooking and nutrition: Smoothies Handle and explore fruits and vegetables and learn how to identify fruit, before undertaking taste testing to establish chosen ingredients for a smoothie they will make, with accompanying packaging.	**Mechanisms: Fairground wheel** Designing and creating their own Ferris wheels, considering how the different components fit together so that the wheels rotate and the structures stand freely. Pupils select appropriate materials and develop their cutting and joining skills.

Year 3	Year 4
Structures: Constructing a castle Learning about the features of a castle, children design and make one of their own. Using configurations of handmade nets and recycled materials to make towers and turrets and constructing a base to secure them.	**Structures: Pavilions** Exploring pavilion structures, children learn about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding.
Digital world: Wearable technology Design, code and promote a piece of wearable technology to use in low light conditions, developing their understanding of programming to monitor and control products to solve a design scenario.	**Electrical systems: Torches** Applying their scientific understanding of electrical circuits, children create a torch, designing and evaluating their product against set design criteria.
Cooking and nutrition: Eating seasonally Pupils discover when and where fruits and vegetables are grown and learn about seasonality in the UK. They respond to a design brief to design a seasonal food tart using ingredients harvested in the UK in May and June.	**Mechanical systems: Making a slingshot car** Transforming lollipop sticks, wheels, dowels and straws into a moving car. Using a glue gun to, making a launch mechanism, designing and making the body of the vehicle using nets and assembling these to the chassis.

Year 5	Year 6
Mechanical systems: Making a pop-up book Creating a four-page pop-up storybook design incorporating a range of mechanisms and decorative features, including: structures, levers, sliders, layers and spacers.	**Digital world: Navigating the world** Programming a navigation tool to produce a multifunctional device for trekkers. Combining 3D objects to form a complete product in CAD 3D modelling software and presenting a pitch to 'sell' their product.
Electrical systems: Doodlers Explore series circuits further and introduce motors. Explore how the design cycle can be approached at a different starting point, by investigating an existing product, which uses a motor, to encourage pupils to problem-solve and work out how the product has been constructed, ready to develop their own.	**Textiles: Waistcoats** Selecting suitable fabrics, using templates, pinning, decorating and stitching to create a waistcoat for a person or purpose of their choice.
Cooking and nutrition: Developing a recipe Research and modify a traditional bolognese sauce recipe to improve the nutritional value. Cook improved version and create packaging that fits design criteria. Learn about where beef comes from.	**Structures: Playgrounds** Designing and creating a model of a new playground featuring five apparatus, made from three different structures. Creating a footprint as the base, pupils visualise objects in plan view and get creative with their use of natural features.

Additional Lessons

1	2	3	4	5	6
Unit: Mechanisms: Making a moving story book (Lesson 1)	Unit: Cooking and nutrition: Balanced diet (Lesson 1)	Unit: Textiles:Cross-stitch and appliqué (Lesson 1)	Unit: Cooking and nutrition: Adapting a recipe (Lesson 2)	Unit: Textiles: Fastenings (Lesson 1) See Year 4	Unit: Cooking and Nutrition: Come Dine with Me TBC
		Unit: Mechanical systems: Pneumatic toys (Lesson 1 and/or 2)	Unit: Textiles: Fastenings (Lesson 1)		