Design & Technology

Design & Technology EYFS - National Curriculum

Early Years Framework	
ELG: Fine Motor Skills Children at the expected level of development will: - Use a range of small tools, including scissors, paint brushes and cutlery - Begin to show accuracy and care when drawing.	**Expressive Arts and Design ELG: Creating with Materials** Children at the expected level of development will: - 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

National Curriculum		
Key Stages	**Key Stage 1** Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to	**Key Stage 2** Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to
Design	♣ 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	♣ 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
Make	♣ 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	♣ 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
Evaluate	♣ explore and evaluate a range of existing products ♣ evaluate their ideas and products against design criteria	♣ 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
Technical knowledge	♣ 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	♣ 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 and nutrition	As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life	
	Key stage 1 ♣ 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

MPPS Design & Technology Long Term Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1				**Block A - Mechanisms** Can you make a picture move?	**Block C-** **Food and Nutrition** How does food affect your senses?	**Block E-** **Textiles** How can two squares of fabric keep you warm?

				Block B- Structures How can you stop a tower from toppling over?	**Block D-** **Understanding Materials** Can you build with bread?	**Block F -** **Food and Nutrition** Why are vegetables the best?
Year 2	**Block A-** **Textiles** How can you repurpose an item of clothing?	**Block C-** **Mechanisms** Are bigger wheels always better?	**Block E-** **Food and Nutrition** How healthy is your food?			
	Block B- **Food and Nutrition** What does healthy mean?	**Block D-** **Understanding materials** How can you waterproof a hat?	**Block F** **Structures** How strong is a piece of paper?			
Year 3				**Block A-** **Textiles** How can you make a box out of cloth?	**Block C-** **Mechanisms** How can you do a lot of work with little effort?	**Block E-Systems** How are things powered?
				Block B- **Food and Nutrition** What do we mean by a balanced diet?	**Block D-** **Food and Nutrition** How does food affect your body and mind?	**Block F-** **Structures** What makes a bridge strong?
Year 4	**Block A-** **Food and Nutrition** What's really in your food?	**Block C-** **Textiles** How do you keep a tea towel from slipping off the hook?	**Block E-** **Electrical Systems** How useful are switches?			

	Block B- **Mechanisms** How many ways are there to open a door?	**Block D** **Structures** Which shape will give a structure stability?	**Block F** **Food and Nutrition** Is cheap food always worse for you?			
Year 5				**Block A-** **Food and Nutrition** Why are our diets so different?	**Block C-** **Textiles** Which fabric is ideal for creating a functional and hard-wearing lunch bag?	**Block E-** **Structures** How are frames strengthened, reinforced and made rigid?
				Block B- **Systems** How can we keep ourselves safe on the road?	**Block D-** **Food and Nutrition** What can we learn from different cultures diets?	**Block F-Mechanism** How can we lift a car onto the roof?
Year 6	**Block A-** **Food and Nutrition** Can street food save us?	**Block D-** **Structures** How strong is a piece of spaghetti?	**Block F-** **Textiles** Can we reduce, recycle and repurpose?			
	Block B- Mechanisms Can pulleys and gears let you see the world?	**Block E-** **Electrical Systems** Can switches perform more than one function?				

DT Core Content and Expectations: Block A and Block B

	Block A	Block B
Year 1	**Core discipline:** Mechanisms **Key concept:** Sliders and levers How can you make a picture move? **How can you make a picture move?** Know common uses of sliders Know different methods to create card sliders Know how sliders can create simple mechanisms Be able to design and make a slider product Be able to evaluate the success of their outcomes and recommend improvements	**Core discipline:** Structures **Key concept:** Freestanding structures **How can you stop a tower from toppling over?** Know a freestanding structure is a structure that stands on its own foundation or base without attachment to anything else Be able to build structures that are freestanding using a range of different materials
Year 2	**Core discipline:** Textiles **Key concept:** Exploring shape using a template **How can you repurpose an item of clothing?** Know how to cut out shapes which have been created by using a template Know how to use a range of basic sewing skills Be able to use a template to transfer a pattern Be able to cut out and join fabric shapes using a template	**Core discipline:** Food and Nutrition **Key concept:** Nutrients and the body **What does healthy mean?** Know why vegetables are so important to our health Know what processed foods are Be able to prepare a range of salad vegetables Be able to shape and season a bread snack
Year 3	**Core discipline:** Textiles **Key concept:** Stiffening and strengthening fabric **How can you make a box out of cloth?** Know fabric can be stiffened Know stiffened fabric can hold a form Be able to select and apply solutions to stiffen fabric	**Core discipline:** Food and Nutrition **Key concept:** Individual diets **What do we mean by a balanced diet?** Know what is meant by the term balanced Know why fresh foods are better Be able to make a fruit and yoghurt dessert Be able to make homemade chips

	Be able to make a box using stiffened fabric	Be able to flavour foods to increase their sensory qualities
Year 4	**Core discipline:** Food and Nutrition **Key concept:** Ultra-processed food **What's really in your food?** Know processed foods have many added ingredients Be able to make, roll and shape bread dough Be able to make a soup	**Core discipline:** Mechanisms **Key concept:** Hinges **How many ways are there to open a door?** Know types of hinges and the related terminology Know common uses for hinges Be able to make a variety of model hinges Be able to make and evaluate hinged products using modelling material
Year 5	**Core discipline:** Food and Nutrition **Key concept:** Food choices **Why are our diets so different?** Know some foods and key ingredients from other cultures Know how other cultures' food can be nutritious Be able to make, roll and cook a flatbread Be able to prepare a range of vegetables Be able to present foods to a high standard	**Core discipline:** Systems **Key concept:** Using technology to design and control **How can we keep ourselves safe on the road?** Know technology can be used to program and control a product Be able to combine elements of their design knowledge to fulfil a bri
Year 6	**Core discipline:** Food and Nutrition **Key concept:** Multicultural influences on food **Can street foods save us?** Know what street foods are Know how snacks can be good foods to eat Be able to make a burrito Be able to make and roll bread dough Be able to make a savoury pastry	**Core discipline:** Mechanisms **Key concept:** Pulleys and gears – rotary and linear Movement **How do pulleys and gears let you see the world?** Know types of pulley systems and gears Know common uses of pulleys and gears Know how pulleys and gears can create simple mechanisms and change direction of movement Be able to design and make a model Ferris wheel powered by gears Be able to evaluate the success of their outcomes and recommend improvements

DT Core Content and Expectations: Block C and Block D

	Block C	Block D
Year 1	**Core discipline:** Food and Nutrition **Key concept:** Exploring food senses **How does food affect your senses?** Know why colourful food can be healthier Know how different foods can affect senses Be able to peel, chop and grate a selection of vegetables Be able to modify food to suit food senses	**Core discipline:** Understanding Materials **Key concept:** Selecting materials **Can you build with bread?** Know building materials have different properties which enable them to be used for different purposes Be able to identify, sort and select materials that can be used in construction Be able to combine materials
Year 2	**Core discipline:** Mechanisms **Key concept:** Axles and wheels **Are bigger wheels always better?** Know how wheels and axles work together Know the size and position of wheels affects how they move Be able to create a simple wheel mechanism Be able to use wheel mechanisms to propel a simple vehicle	**Core discipline:** Understanding Materials **Key concept:** Manipulating materials **How can you waterproof a hat?** Know materials can be modified to become waterproof Know origami comes from the Japanese words: ori – folding and kami – paper Be able to make paper waterproof Be able to transform flat paper by folding and creasing to form a hat
Year 3	**Core discipline:** Mechanisms **Key concept:** Levers and linkages – mechanical advantage **How can you do a lot of work with little effort?** Know types of levers and linkages Know key terminology relating to levers and linkages Know how levers and linkages can change the direction of movement	**Core discipline:** Food and Nutrition **Key concept:** Food as medicine **How does food affect your body and mind?** Know food can help body and mind Know how to prepare and cook a range of vegetables Be able to peel and grate a range of vegetables Be able to add flavour and texture to foods

	Be able to design and make simplistic lever and linkage products Be able to evaluate the success of outcomes and recommend improvements	
Year 4	**How do you keep a tea towel from slipping off a hook?** Know fastenings have different functions Know a shank provides a small amount of space between the button and fabric Be able to select appropriate fastenings and attach them to fabric Be able to make a shank for a button	**Core discipline:** Structures **Key concept:** Designing structures using a frame to make them stronger and sturdier **Which shapes will give a structure stability?** Know triangles provide stability in a structure Know structural engineers work with architects to ensure structures withstand forces Be able to make triangles to form and join trusses Be able to identify the forces that affect structures
Year 5	**Core discipline:** Textiles **Key concept:** Durability of fabric **Which fabric is ideal for creating a functional and hardwearing lunch bag?** Know how to waterproof cotton fabric Know which fabrics are both functional and hardwearing Be able to use beeswax to waterproof cotton fabric Be able to repurpose a pair of jeans	**Core discipline:** Food and Nutrition **Key concept:** Cultural influences on diet **What can you learn from different cultures' diets?** Know how foods can be used as medicines Know how eating food from different countries can help us be healthy Be able to roll and shape ingredients Be able to slice and ribbon a range of vegetables Be able to stir-fry vegetables
Year 6	**Core discipline:** Food and Nutrition **Key concept:** Food and mood **Does food affect the way you feel?** Know the difference between slow release and quick release carbohydrates	**Core discipline:** Structures **Key concept:** Designing structures revisited –combining skills and knowledge **How strong is a piece of spaghetti?** Know structures can be supported with guy lines and flying buttresses

	Know how food can improve mood and energy levels Be able to dice, slice, peel, grate and cook a range of vegetables Be able to make a sauce and a stock Be able to use height and colour to improve the visual appeal of food	Know the shorter the piece of spaghetti, the stronger it will be Be able to construct a flying buttress to support a tower Be able to use appropriate lengths of spaghetti to increase strength and stability

DT Core Content and Expectations: Block E and Block F

	Block E	Block F
Year 1	**Core discipline:** Textiles **Key concept:** Joining techniques **How can two squares of fabric keep you warm?** Know fabric can be joined together using a running stitch Know the types and names of tools needed for sewing Be able to create a running stitch Be able to select tools for sewing Be able to thread a needle	**Core discipline:** Food and Nutrition **Key concept:** Vitamins in food **Why are vegetables the best?** Know the importance of including a range of vegetables in a diet Be able to peel, grate, season and breadcrumb a range of vegetables
Year 2	**Core discipline:** Food and Nutrition **Key concept:** Processed food **How healthy is your food?** Know the difference between fresh food and ultra-processed foods Be able to shape and form ingredients to make delicious food Be able to use a range of culinary techniques	**Core discipline:** Structures **Key concept:** Developing strength in structures **How strong is a piece of paper?** Know paper becomes stronger when it is folded Know a load is the amount of weight a structure must carry Be able to fold paper to increase strength and stability Be able to test and record how much weight paper can hold
Year 3	**Core discipline:** Systems **Key concept:** How things are powered	**Core discipline:** Structures **Key concept:** Spanning gaps

	How are things powered? Know different types of energy Know why designers need to carefully consider energy sources Be able to identify how things are powered Be able to suggest appropriate energy sources for design problems	**What makes a bridge strong?** Know bridges are structures that allow people and vehicles to cross over an open space Know towers, piers and arches provide strength to a bridge Be able to design and build a beam bridge that can hold the weight of 100 pennies Be able to identify and name parts of a bridge
Year 4	**Core discipline:** Electrical Systems **Key concept:** Switches and circuits revisited **How useful are switches?** Know a switch is an interruption in a circuit Know switches are widely used in a range of products Be able to incorporate different types of switches into circuits to perform a function	**Core discipline:** Food and Nutrition **Key concept:** Benefits of fresh food **Is cheap food always worse for you?** Know that cheap processed food often contains additives, salt and sugar, which makes it less healthy than unprocessed food Be able to peel, grate and chop vegetables to make economical, tasty and healthy food
Year 5	**Core discipline:** Structures **Key concept:** Developing structures that are fit for purpose **How are frames strengthened, reinforced and made rigid?** Know engineers use a range of methods to strengthen and reinforce structures Be able to identify and describe ways that frames are strengthened and reinforced	**Core discipline:** Mechanisms **Key concept:** Pulleys and gears - transferring rotational force **How can you lift a car onto a roof?** Know types of gears and terminology relating to gears Know common uses of pulleys and gears Know how pulleys and gears can change the direction of movement Be able to design and make products that use pulleys and gears to lift loads Be able to evaluate the success of outcomes and recommend improvement

Year 6	**Core discipline:** Electrical Systems **Key concept:** Complex switches and circuits **Can switches perform more than one function?** Know more than one switch can be used to change the functionality of a product Be able to use switches to adapt a product in response to a design brief	**Core discipline:** Textiles **Key concept:** Sustainable materials **How can you reduce, recycle, repurpose?** Know plastic waste can be recycled and repurposed into practical, useful items Be able to make a crochet hook out of a chopstick Be able to use plastic bags and snack packets to create practical items