Progression of Knowledge in: Design and Technology

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 stage 1
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

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

Evaluate
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

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.

Key stage 2

Design
- 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 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

- 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

- 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. Pupils should be taught to:

Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

Key stage 2

- 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

Year Groups	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Units	**1, Food technology** What could a healthy soup contain? **2,Mechanisms** Can I make a picture page with moving parts? **3,Mechanisms**	**1,Stable structures** Which joins create a stable structure? **2,Food technology** Can I create a healthy pizza for my learning partner?	**1,Shell structures-** Can I create a frame structure using different strengthening techniques? **2,Food technology** Can I design a new type of bread?	**1,Mechanisms** Can I create a story book with moving parts? **2,Food technology** Can I create a healthy biscuit?	**1, Mechanisms** How do mechanisms work? (cams) **2,Textiles** Can I create a stuffed toy for younger children using research?	**1,Food technology** Can I design and make a new pasta shape and healthy sauce for our school lunch? **2,Food technology** Can I create a

	Can I create a moving vehicle using wheels and axles?	**3,Textiles** What is the most effective way to join fabric?	**3, Textiles** Which fastening methods are the most effective?	**3, Electrical systems** Can I create a functional battery-powered night light using a simple circuit? Night light (Hepp DT)	**3,Food technology** Can I use seasonal ingredients to create a savoury quiche?	sustainable food dish with the lowest food mile? **3,Electrical systems** How can I use my knowledge of electrical circuits to create a motorised buggy? (Hepp DT)

DT	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Design products that have a purpose and an intended user through talking and drawing (1)	Design products that have a purpose, are appealing and specific design features (1,3) Design functional and appealing products (3) Explain	Design realistic ideas and products using their own design criteria (3) Explain how their products will look and work and be finished through talking and annotated	Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user (1.3) Gather information about the needs and wants of particular individual and groups (3) Order the stages of making with details about techniques,	Make design decisions taking into account constraints such as time and resources (1) Generate innovative ideas drawing on research (1) Use research and develop design criteria to inform the	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 (2,3) Generate, develop, model and communicate

		how their products will look and be finished by talking and simple annotated drawings (1)	drawings and use of CAD (1, 3) Order the stages of making (1,3) Use annotated sketches, pattern pieces and prototypes to develop and communicate ideas (2,3)	materials and tools (1) Use annotated sketches, prototypes to develop, model and communicate ideas (1,3)	design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals (2) Use annotated sketches, exploded diagrams and pattern pieces to develop and communicate their ideas (1, 2)	their ideas through annotated sketches, prototypes, cross sectional and exploded diagrams and CAD (2,3)
Make	Explore and use mechanisms in their products (levers and sliders) (1) Cut and join materials using scissors, glue, split pins and single hole punches (1) Begin to mark out, cut and join	Join materials using stitching (running stitch and overstitch) (1) Cut and join fabric to make a simple product (1) Measure and cut with some accuracy (1)	Measure, mark out, cut materials with some accuracy (1,3) Join materials using stitching (running stitch, overstitch and backstitch) (3) Assemble, join and combine materials with	Measure, mark out, cut materials with increasing accuracy (1) Select from and use appropriate tools with accuracy (1) Assemble, join and combine materials with accuracy (1,3)	Produce appropriate lists of tools, equipment and materials that will be needed (1) Accurately assemble, join and combine materials and components (1,2)	Explain their choice of tools and equipment in relation to the skills and techniques they will be using (3) Explain their choice of materials and components according to functional properties and

	materials safely using tools provided (3) Select and use a range of materials to make a products (3)	Begin to use needles safely and appropriately (3) Join materials effectively using different techniques (flange, slot and L brace join) (3) Select from and use tools and equipment to perform practical tasks cutting, joining, shaping and finishing with developing independence (3) Use simple techniques to finish their	some accuracy (1) Apply finishing techniques including from art and design with some accuracy (1,3)	Select from and use finishing techniques suitable for the product they are creating (1)	Select tools and equipment suitable for the task (2) Accurately apply a range of finishing techniques (1,2)	aesthetic qualities (3)

		product and improve its appearance (1) Demonstrate joining techniques for a mock up (3)				
Evaluate	Evaluate existing products and designs to identify likes and dislikes (1,3) Evaluate their own ideas and products by testing (1,3) Discuss what they found easy or hard (1) Discuss what changes they would make if	Explore and evaluate existing products, giving reasons for their views. (3) Explore and evaluate a range of existing products giving reasons why certain materials have been used for the intended purpose (1)	Investigate and analyse a range of existing products by considering function and materials (3) Evaluate their ideas throughout and their final products against original design criteria (1,3)	Investigate and analyse products considering if they can be recycled or reused (1) Evaluate their ideas throughout, their final products and those of others against original design criteria (3) Begin to understand how individuals in design and technology have helped shape the	Evaluate and investigate existing products considering how sustainable the materials are (1) Evaluate and investigate existing products considering how innovative products are (2)	Investigate and analyse existing products considering how well products have been designed and why materials have been chosen (3) Evaluate their ideas throughout,

	they were to do it again (1) Ask their peers questions about how they made their products (3)	Begin to understand why we evaluate (3)		world (3)	Critically evaluate the quality of the design and fitness for purpose as they design and make (1,2) Evaluate their ideas throughout, their final products and those of original design criteria. Consider the views of others to improve their work	their final products and those of original design criteria. Consider the views of others to improve their work and justify reasoning (3) Understand how key events and individuals in design and technology have helped shape the world (3)
Technical knowledge	Know what a slider and lever are (1) Explore and use mechanisms in their products (levers and	Use technical vocabulary of fastenings and materials (1) Know correct technical vocabulary	Know what a shell structure and a frame structure are (1) Explore how to strengthen	Know what a linkage and lever does (1) Explain how linkages create movement and how the direction can be changed (1)	Understand how mechanical systems (cams) create movement (1) Know correct technical	Know how more complex electrical circuits and components can be used to create functional products (3)

	sliders) (1) Know and name simple mechanisms (1) Make and strengthen products, with support (1) Know what axles and wheels do (3) Being to know that structures need to be strong and stable (3)	(running stitch and overstitch) Understand how materials can be combined for different functions (1) Build structures exploring how they can be made stronger, stiffer and more stable Know that a structure is something which has been formed or made from parts (3) Know that shapes and structures with wide, flat bases or legs are the most stable (3)	structures using range of joints (trusses and triangulation) (1) Apply understanding of how to strengthen, stiffen and reinforce more complex structures (trusses and triangulation) (1) Know correct technical vocabulary (running stitch, overstitch and back stitch)	Understand and use lever and linkage mechanisms (1) Know how simple electrical circuits and components can be used to create functional products (3) How to program a computer to control their products	vocabulary (running stitch, overstitch, back stitch, blanket stitch) (2) Understand that 3D textiles product can be made from a combination of fabric shapes (2)	How to program a computer to monitor changes in the environment and control their products

		Know that a 'stable' structure' is one which is firmly fixed and unlikely to change or move (3) Understand the shape of a structure affects its strength (3) Know that materials can be manipulated to improve strength and stiffness (3)				
Food Including progression of chopping	Begin to know and use technical vocabulary (1) Begin to use the basic principles of a healthy and varied diet to prepare dishes	Know and use technical vocabulary (2) Understand and use the principles of a balanced and varied diet to	Develop sensory vocabulary/knowledge using smell, taste, texture, feel (Spring 2) Begin to apply knowledge of a healthy and varied diet	Analyse the taste, texture, smell and appearance of a range of foods (2) Select ingredients (2) Begin to measure ingredients using scales (2)	Apply sensory vocabulary/knowledge using smell, taste, texture, feel (2) Apply knowledge of a healthy and	Understand and apply the principles of a healthy and varied diet and apply in their ingredient choices (1)

	(1) Understand where vegetables come from and are part of the Eatwell Plate (Autumn 1) Begin to read recipes (1) Use basic food handling and personal hygiene (1)	prepare dishes (2) Explain where food comes from and are part of the Eatwell plate (Spring 2) Read recipes (2) Use basic food handling, hygiene practices and personal hygiene (2) Measure ingredients using non standards units (cups) (2)	(Spring 2) Explore seasonality of foods (Spring 2) Begin to follow instructions/recipes (2) Prepare and cook using a range of cooking techniques safely and hygienically () Measure and weigh ingredients using non standards units (cups) (2)	Follow instructions/recipes (2) Begin to adapt recipes (2) Prepare and cook using a cooking technique and utensils safely and hygienically (2)	varied diet (2) Know where and how ingredients are grown, reared, caught (2) Follow adapted recipes (2) Use knowledge of seasonality of vegetables in adapted recipes (3) Prepare and cook using a range of cooking techniques and utensils safely and hygienically (2) Measure ingredients	Evaluate nutritional value of food (1) Know where and how ingredients are grown, reared, caught and processed and explained food miles (2) Know and apply importance of working hygienically (1) Select and prepare foods for a particular purpose (1) Use a range of cooking techniques to cook a widening range of ingredients hygienically using appropriate utensils (1)

					using scales (Summer 2)	Measure accurately to the nearest gram and scale up or down from a recipe (1)
	Using the equipment and moving it or the food in the correct direction (1) With adult supervision, use the bridge hold to cut harder foods (1) Grate and peel a range of foods with support (1)	Grate and peel a range of foods with limited support (2) With limited adult supervision, use the bridge hold to cut harder foods (2)	Use bridge hold independently (2)	Use the claw grip to cut harder foods (3) Use use the bridge and claw grip to cut the same food (3)	Be able to use the bridge and claw grip on the same food item using a serrated vegetable knife, with limited support. (3) Be able to dice and cut foods into evenly sized small pieces, with limited support (3)	Use the bridge and claw grip on the same food item using a serrated vegetable knife (2) Be able to dice and cut foods into evenly sized small pieces (2)