DT Knowledge and Skills Progression Map 2023-2024

National Curriculum KS1	National Curriculum KS 2
Pupils should be taught about: **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 e.g. 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 e.g. levers, sliders, wheels and axles, in their products. **Cooking and Nutrition:** • Use the basic principles of a healthy and varied diet to prepare dishes. • Understand where food comes from.	**Pupils should be taught about:** **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 e.g. 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 e.g. gears, pulleys, cams, levers and linkages. • Understand and use electrical systems in their products e.g. series circuits incorporating switches, bulbs, buzzers and motors. • Apply their understanding of computing to program, monitor and control their products. **Cooking and Nutrition:** • 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.

DT Strands	EYFS	KS1	Lower KS2	Upper KS2

Design		• Use pictures and words to convey what they want to design/make. •Propose more than one idea for their product. • Use kits/reclaimed materials to develop more than one idea. • Model ideas / make mock-ups with kits, reclaimed materials. • Select appropriate technique explaining: First… Next… Last…. • Explore ideas by rearranging materials/ingredients. • Select pictures to help develop ideas. • Use drawings to record ideas as they are developed. • Add notes to drawings to help explanations. • Use ICT to communicate their ideas. • Describe their models and drawings of ideas and intentions	• Develop more than one design or adaptation of an initial design. • Plan a sequence of actions to make a product. • Record the plan by drawing using annotated sketches. • Begin to use cross-sectional and exploded diagrams. • Use prototypes to develop and share ideas. • Think ahead about the order of their work and decide upon tools and materials/ingredients. • Propose realistic suggestions as to how they can achieve their design ideas. • Consider aesthetic qualities of materials/ingredients chosen.	• List tools needed before starting the activity. • Plan the sequence of work e.g. using a storyboard. • Record ideas using annotated diagrams. • Use models, kits and drawings to help formulate design ideas. • Combine modelling and drawing to refine ideas. • Devise step by step plans which can be read / followed by someone else. • Use exploded diagrams and cross-sectional diagrams to communicate ideas. • Sketch and model alternative ideas. • Decide which design idea to develop.
Make		Discuss their work as it progresses. • Select materials/ingredients from a limited range that will meet the design criteria. • Select and name the tools needed to work the materials/ingredients. • Explain what they are making. • Explain which materials/ingredients they are using and why. • Name the tools they are using. • Describe what they need to do next	• Prepare pattern pieces as templates for their design. • Cut slots. • Cut internal shapes. • Select from a range of tools for cutting shaping joining and finishing. • Use tools with accuracy. • Select from techniques for different parts of the process. • Select from materials according to their functional properties. • Plan the stages of the making process • Use appropriate finishing techniques.	• Make prototypes. • Develop one idea in depth. • Use researched information to inform decisions. • Produce detailed lists of ingredients / components / materials and tools. • Use a computer to model ideas. • Select from and use a wide range of tools. • Cut accurately and safely to a marked line. • Select from and use a wide range of materials. • Use appropriate finishing techniques for the project. • Refine their product – review and rework/improve.
Evaluate		• Explore existing products and investigate how they have been made. • Decide how existing products do/do not achieve their purpose. • Talk about their design as they develop and identify good and bad points. • Note changes made during the making process as annotation to plans/drawings. • Say what they like and do not like about items they have made and attempt to say why. • Discuss how closely their finished product meets their design criteria and how well it meets the needs of the user.	• Investigate similar products to the one to be made to give starting points for a design. • Draw/sketch products to help analyse and understand how products are made. • Research needs of user. • Identify the strengths and weaknesses of their design ideas in relation to purpose/user. • Decide which design idea to develop. • Consider and explain how the finished product could be improved. • Discuss how well the finished product meets the design criteria of the user. • Investigate key events and individuals in Design and Technology.	• Research and evaluate existing products. • Consider user and purpose. • Identify the strengths and weaknesses of their design ideas. • Give a report using correct technical vocabulary. • Consider and explain how the finished product could be improved related to design criteria. • Discuss how well the finished product meets the design criteria of the user. Test on the user! • Understand how key people have influenced design.

		Nursery	Reception	Year1	Year 2	Year 3	Year 4	Year 5	Year 6
Technical Skills		Knowledge							
			• Healthy foods. • Different food groups.	• Develop a food vocabulary using taste and smell. • Group familiar food products e.g. fruit and vegetables. • Know whether food comes from an animal or a plant.. • Work safely and hygienically. • Begin to understand the need for a variety of foods in a diet.	• Continue building a food vocabulary using taste, smell, texture, sight and feel. • Begin to group familiar food products into the 5 main food groups – Eatwell plate. • Know which animals meats come from. • Know which part of a plant vegetables and plants come from. • Work safely and hygienically. • Understand the need for a variety of foods in a diet. • Know which foods we should eat more of and which foods we should eat occasionally.	• Develop sensory vocabulary/knowledge using, smell, taste, texture and feel. • Analyse the taste, texture, smell and appearance of a range of foods. • Begin to follow instructions/recipes. • Make healthy eating choices – use the Eatwell plate. • Explore seasonality of vegetables and fruit. • Find out which fruit and vegetables are grown in countries/continents studied in Geography. • Develop understanding of how meat/fish are reared/caught.		• Work safely and hygienically. • Confidently understand what a healthy diet is and apply in their ingredient choices. • Know where and how ingredients are grown and processed. • Follow instructions/recipes independently.	
		Measuring							
				• Measure and weigh food items, non-statutory measures e.g. spoons, cups.	• Measure and weigh food items, non-statutory measures e.g. spoons, cups.	• Prepare and cook using a range of cooking techniques.		• Weigh and measure using scales. • Use a range of cooking techniques.	
		Preparation							

				• Cut, slice and squeeze a range of fruit and vegetables. • Use plastic, child-safe knives, squeezers and blenders.	• Cut, peel, grate and chop a range of fruit and vegetables. • Begin to use sharp knives (with adult supervision), graters and peelers.	• Join and combine a range of ingredients.		• Join and combine a widening range of ingredients. • Select and prepare foods for a particular purpose. • Prepare mostly savoury dishes using their own selection of ingredients, taking into account their nutritional properties and sensory characteristics.	
Textiles	Template								
	• Develop the correct hold when cutting (no template). • Increase accuracy when cutting.	• Cutting in a straight line, practise on variety of materials (no template).	• Cut out shapes which have been created by drawing round a template onto the fabric or using the most appropriate attachment e.g. using: sticky tape, chalking, safety pin. • Teacher given template.	• Cut out shapes which have been created by drawing round a template onto the fabric e.g. using: pinning, stapling. • Basic template design app – print, cut out.	• Use prototype to make pattern – J-cloth/dipryl. • Use most appropriate attachment for template.		• Create 3D products using patterns pieces and seam allowance. • Understand pattern layout.	
	Fabric Choices								
	• Explore different fabrics for different purposes e.g. hold water, dance, keep warm, block out light etc.	• Explore the most effective use of fabric for the purpose of a book mark.	• Explore the most effective use of fabric for the purpose of a puppet. • Cut out own fabric with some support.	• Explore the most effective fabric type which is strong, flexible and holds its shape. • Explain by giving simple reasons and properties why a fabric is not suitable. • Begin to explain why different fabrics are used for different purposes. • Cut out own fabric.	• Explore strengthening and stiffening of fabrics. • Explain how strengthening and stiffening of fabrics improves a product.		• Combine fabrics to create more useful properties. • Explore the benefits and issues with combining different types of fabric.	
	Fastenings								

		N/A	N/A	N/A	• Use basic fastenings e.g. sticky Velcro, press studs (cold glue gun), simple tie (hole – using hole punch and ribbon)	• Explore fastenings and recreate some: Velcro (sewn on), buttons and loops, press studs (sewn on), ties and toggles.		• Explore fastenings and recreate some; zips, buttons (with button holes), clasps, buckles, sewn press studs	
		Joins							
		•Investigate joining fabrics by using glue sticks and tape.	• Investigate joining fabrics by using PVA glue, double sided tape.	•Investigate joining fabrics by using running stitch, safety pins.	• Investigate joining fabrics by using over stitch, staples and pins.	• Investigate joining fabrics using blanket stitch, back stitch, backwards running stitch. • Develop understanding of seam allowance.		• Pin and tack fabric pieces together including sewing and shaping curved edges. • Join fabrics using the most appropriate stitch they have learnt in order to create a neat product. • Machine stitch with close adult support.	
		Finishing's							
		• Finish fabrics with sticky gems, ribbon, bead strings etc.	• Finish fabrics with glitter pens, other fabric etc.	• Decorate fabrics with attached items e.g. sequins, shiny fabric, braids, ribbons with glue. • Colour fabrics using a fabric crayons or pens.	• Decorate fabrics with attached items e.g. buttons, beads by sewing them on. • Colour fabrics using an increasing range of techniques e.g. fabric paints in addition to previous fabric colouring techniques. • Add appliqué using glue.	• Add an appliqué to their design – sewn on. • Use a decorative stitch such as cross stitch.		• Decorate textiles appropriately (often before joining components). • Use stem stitch, satin stitch, lazy daisy stitch or chain stitch.	
	Structures	Knowledge							
				• Refer to materials tools and techniques using appropriate vocabulary.	• Refer to materials tools and techniques using appropriate vocabulary.	• Develop vocabulary related to the project. • Explain how the shape of a structure affects its stability. • Know that the weight of the structure needs to be evenly spread on the base to make it secure.		• Use the correct terminology for tools materials and processes. • Build frameworks to support mechanisms. • Use different methods to strengthen or reinforce their designs. • Explain how triangulation strengthens structures.	

		Joins						
			• Join appropriately for different materials and situations e.g. glue, tape, plasticine.	• Use a cold glue gun with close supervision. • Join appropriately for different materials e.g stapler.	• Use hot glue guns with close supervision.		• Join materials using appropriate methods.	
		Tools and Materials						
			• Mark out materials to be cut using a template.	• Mark out materials to be cut using a template.	• Select and use appropriate tools and materials.		• Select appropriate materials and tools confidently and independently to create a bird feeder e.g. G-clamp, junior hacksaws, glass paper etc.	
		Investigate						

				• Explore how to make structures stronger. • Investigate different techniques for stiffening a variety of materials. • Test different methods of enabling structures to remain stable.	• Explore how to make structures stronger. • Investigate different techniques for stiffening a variety of materials. • Test different methods of enabling structures to remain stable.	• Investigate ways of making a structure more stable.		• Predict and test the strength of different beam shapes using paper and card. • Investigate and analyse a range of permanent and portable frame structures.	

	Mechanical and Electrical	Knowledge						
			• Understand and use a pivot and lever mechanism. • Match a mechanism to the type of movement it makes.	• Use technical vocabulary when describing mechanisms, tools and materials they use.		**Mechanisms** • Develop vocabulary related to the project. • Explain how simple pneumatic systems work using appropriate vocabulary. • Recognise familiar objects that use air to make them work. • Describe how objects use air to make them work. **Electrical** •Understand the uses of a torch. • Understand that switches work in different ways. • Understand the dangers of mains electricity. • Explain how a simple circuit works. •Understand the uses of an electronic charm.		**Mechanisms** •Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to the project. **Electrical** • Explain how computers and computer programs are used in different products. • Explain how modern memory chips work to store information. • Know what a computer engineer is and what they do.
		Investigation						

				• Look at pivot and lever and sliding mechanisms in a range of different contexts.	• Try out different axle fixings and their strengths and weaknesses. • Make vehicles with construction kits which contain free running wheels.		**Mechanisms** • Investigate ways of using pneumatic systems with other materials to control movement. **Electrical** • Investigate different ways of creating switches and circuits. • Investigate different ways of programming an electronic charm.		**Mechanisms** • Explore how different transmissions create different movements. **Electrical** • Investigate different kinds of electrical circuits and their uses. • Investigate different ways to programme a navigation device.
		Joins							
				• Use a split pin safely. • Use tape effectively.	• Join appropriately for different materials and situations e.g. glue, tape.		**Mechanisms** • Understand the importance of joining to avoid air leakage. • Know the different types of joins and how to effectively use them. **Electrical** • Know how to safely connect circuits.		**Mechanisms** • Explore a range of joins to find the most effective. **Electrical** • Investigate different ways to safely connect circuits.
		Tools							
				• Know the most effective ways to cut paper. • Know different tools that can be used to cut paper. • Cut paper using scissors.	• Know which tools are needed for different jobs. • Cut dowel using hacksaw and bench hook. • Use a hole punch and Insert paper fasteners for card.		**Mechanisms** • Use scissors/knife/snips/card drills and cutting mat to safely cut up components. • Use the most appropriate tools for the material being cut. • Measure the correct amount of plastic tubing needed.		**Mechanisms** • Use a bradawl to mark holes on wooden cams. • Use a drill to create holes in wooden cam • Use junior hacksaws, glass paper, G-clamps, bench hooks and hand drills effectively and independently.
		Construction							

				• Make a sliding mechanism out of card.	• Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels. • Attach wheels to a chassis using an axle.		**Mechanisms** • Create simple effective pneumatic systems. **Electrical** • Construct a simple circuit to make an effective and useful torch. • Programme a computer to control a product.		**Mechanisms** • Create a simple effective product which uses cams effectively. **Electrical** • Construct the most effective circuit to create a steady hand game. • Programme a computer to create a navigation device.