Design and Technology Progression Map

DT Progression Document

Nursery- Year 6

Early Learning Goals	**Physical Development: Fine Motor Skills ELG** - use a range of small tools, including scissors, paintbrushes and cutlery. **Expressive Arts and Design: Creating with Materials ELG** - 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.
KS1 National Curriculum	Pupils should be taught: **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 **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.
KS2 National Curriculum	Pupils should be taught: **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

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KS2 National Curriculum	**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** -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.

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Design			
EYFS	**KS1**	**LKS2**	**UKS2**
Can explore existing products. Can explore different materials freely, to develop their ideas about how to use them and what to make. Can simply talk about what they will make. Can talk about what they will need. Can create closed shapes with continuous lines, and begin to use these shapes to represent objects in their designs. Can choose particular colours for a purpose. Can create for use of props and materials when role playing characters in narratives and stories.	Can explore and evaluate existing products,(Aut 2/ Spr 1) using these to generate their own ideas. (Aut 2/ spring 1) Can say what they like and dislike about existing products. (Aut 2 / Spring 1) (Autumn 2) Can generate and communicate ideas using sketching (Aut 2/ Sum 2) and ICT software. Summer1 Can contribute to creating a class design criteria for a product. (Aut 2/ Spring 1)(Autumn 2) Designing a product for a specific audience in accordance with a design criteria. ((Aut 2/ Spring 1) (Autumn 2) Can design a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. (Summer 1) Can talk about their design ideas and what they are making. (Aut 2/ Spring 1/ Sum 2) (Autumn 2) Can clearly label drawings which illustrate movement. (Aut 2) Can use a template to design a puppet. (Aut 2)	Can design and/or decorating on CAD software. Can develop their own design criteria and use these to inform their idea.Spring Can create a design with key features to appeal to a specific person/purpose. (Spring 2) Can use annotated sketches and exploded diagrams to develop and communicate their idea (Spring 2) Can draw and label a design using 2D shapes, labelling the 3D shapes that will create the features, materials needed and colours. (Summer 2) Can draw a net to create a structure. Can personalise a design, taking influence from their local community. (Summer 2) Can describe the purpose of their products.(Summer 2) Can design and make a template from an existing product and apply individual design criteria.(Summer 2)	Can create a design criteria for a product, articulating decisions made. Digital World: Monitoring Devices Summer 2 B Can identify the needs, wants, preferences and values of particular individuals and groups. Digital World: Monitoring Devices Summer 2 B Can carry out research, using surveys, interviews, questionnaires and web-based resources. Links to Digital World: Monitoring Devices Summer 2 B Can generate innovative ideas, drawing on research and can share and clarify these through discussion. Digital World: Monitoring Devices Summer 2 B Can develop, model and communicate ideas through annotated sketches, pictorial representations of electrical circuits and prototypes. Can draw cross-sectional diagrams to show the inner-working. Can name each mechanism, input and output accurately. Can create a design based on a choice of cam to create a desired movement. Digital World: Monitoring Devices Summer 2 B

			Understands how linkages change the direction of a force. Can explain their choice of tools and equipment in relation to the skills and techniques they will be using. Can design a frame structure with focus on triangulation. Can design a stable structure that is able to support weight. Autumn 2 B (Bridges) Can create an appropriate template in textiles, taking into consideration the main component shapes required. Autumn A (Stuffed Toys)

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Make			
EYFS	**KS1**	**LKS2**	**UKS2**
Can construct with a purpose in mind, using a variety of resources. Understand that different media can be combined to create new effects. Can explore a variety of materials. Can follow directions given one at a time. Can follow my own design with support. Can hold simple tools correctly including a knife, fork and scissors. Can use construction kits to build walls, towers and frameworks. Can use basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. Can use simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. Can use a large plastic needle for sewing with support.	Can build a strong and stiff freestanding structure.(Aut2) Can make a structure according to design criteria. (Aut2) Can create joints and structures from paper/card and tape. (Aut2) Can follow a design to create moving models that use levers and sliders(Aut 2). Can adapt mechanisms. (Aut 2). Can make linkages using card for levers and split pins for pivots. (Aut 2). Can experiment with linkages adjusting the widths, lengths and thicknesses of card used. (Aut 2). Can cut fabric neatly with scissors. (summer 2) Can use joining methods to decorate a puppet. (Aut 2). Can sequence steps for construction. (Aut 2).	Can create special features for individual designs. Can make a model based on a chosen design. (Aut 2) Can select appropriate tools and equipment for particular tasks. (Aut 2 and Summer 2) Can refer to their design criteria as they design and make. (Autumn 2and Spring 1) Can apply a range of finishing techniques, including those from art and design, with some accuracy. (Autumn 2) Can measure, mark, cut and assemble materials with increasing accuracy. Can make a strong and stiff shell structure. Can make structures from a range of recycled materials. Can construct a range of 3D geometric shapes using nets. Creating a pneumatic system to create a desired motion. (Autumn 2) Can select and cut fabrics with ease using fabric scissors. Can thread needles with greater independence.	Can make a strong and stiff frame structure. Autumn 2 B (Bridges) Know where a structure needs reinforcement and can use card corners for support. Autumn 2 B (Bridges) Can use triangles to create truss bridges that span a given distance and supports a load. Autumn 2 B (Bridges) Can independently measure, mark and cut materials accurately using a ruler and scissors. Can use the correct techniques to saw safely. Autumn 2 B (Bridges) Can explain why selecting appropriate materials is an important part of the design process. Know basic wood functional properties. Autumn 2 B (Bridges) Know that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. Can assemble components accurately to make a stable frame. Can select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set

		Can tie knots with greater independence. Can cross stitch to join fabric. Can decorate fabric using appliqué. Can complete design ideas with stuffing and sewing the edges. Can make their design with a working electrical circuit and switch.	Making mechanisms and/or structures using sliders, pivots and folds to produce movement. Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. Can create a 3D stuffed toy from a 2D design. Autumn A (Stuffed Toys) Can measure, mark and cut fabric accurately and independently Autumn A (Stuffed Toys) Can create strong and secure blanket stitches when joining fabric. Autumn A (Stuffed Toys) Can thread needles independently Can use applique to attach pieces of fabric decoration. Autumn A (Stuffed Toys) Can sew blanket stitch to join fabric. Autumn A (Stuffed Toys) Can apply blanket stitch so the space between the stitches are even and regular. Autumn A (Stuffed Toys) Can use microbits to apply their understanding of computing to program, monitor and control their products. Digital World: Monitoring Devices Summer 2 B

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Evaluate			
EYFS	**KS1**	**LKS2**	**UKS2**
Can talk about how they made their product. Can talk about how they decorated their product. Can talk about the tools they used. Can talk about what they like about their product.	Can test the strength of own structures Identifying the weakest part of a structure.(Aut2) Can evaluating the strength, stiffness and stability of own structure.(Aut2) Can test a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. (Aut 2). (Summer 1) Can test mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move. (Summer 1) Can reflect on a finished product, explaining likes and dislikes. (Aut 2/ Spring 1/ Sum 2).	Can evaluate their own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design. Can suggest points for modification of the individual designs. Can evaluate the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. Can evaluate electrical products. Can test and evaluate the success of a final product. (Autumn 2) Can evaluate an end product and thinking of other ways in which to create similar items.(Autumn 2)	Can adapt and improve their own structure by identifying points of weakness and reinforcing them as necessary. Autumn 2 B(Bridges) Can suggest points for improvements for own structures and those designed by others. Autumn 2 B (Bridges) Can evaluate the work of others and receiving feedback on own work. Autumn A (Stuffed Toys) Can apply points of improvements. Can describe changes they would make/do if they were to do the project again. Autumn 2 B (Bridges) Can test and evaluate an end product and give points for further improvements.

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Technical Knowledge			
EYFS	**KS1**	**LKS2**	**UKS2**
Can understand what sewing is. Can identify where sewing is used. Know the names of some materials used for construction. Know that a 'strong' structure is one which does not break easily Know that a 'stiff' structure or material is one which does not bend easily. Know that drawing a design idea is useful to see how an idea will look. Know that there are various temporary methods of joining fabric by using staples. glue or pins.	Know that materials can be manipulated to improve strength and stiffness. (Aut 2). Know that a structure is something which has been formed or made from parts. Aut2 Know that a 'stable' structure is one which is firmly fixed and unlikely to change or move.Aut2 Know that a mechanism is the parts of an object that move together. (Aut 2). Know that a slider mechanism moves an object from side to side. (Aut 2). Know that a slider mechanism has a slider, slots , guides and an object. (Aut 2). Know that wheels need to be round to rotate and move. (summer 1) Understand that for a wheel to move it must be attached to a rotating axle. (summer 1) Know that an axle moves within an axle holder which is fixed to the vehicle or toy (summer1). Know that the frame of a vehicle (chassis) needs to be balanced. (summer 1) Know that 'joining technique' means connecting two pieces of material together. (Aut 2).	Understand that wide and flat based objects are more stable. Understand the importance of strength and stiffness in structures. Know that air resistance is the level of drag on an object as it is forced through the air. Understand that the shape of a moving object will affect how it moves due to air resistance. Know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric. Know that when two edges of fabric have been joined together it is called a seam. Know that it is important to leave space on the fabric for the seam. Understand that some products are turned inside out after sewing so the stitching is hidden. Know that an electrical circuit must be complete for electricity to flow. Know that a switch can be used to complete and break an electrical circuit.	Understand some different ways to reinforce structures. Autumn 2 B (Bridges) Understand how triangles can be used to reinforce bridges. Autumn 2 B (Bridges) Know that properties are words that describe the form and function of materials. Understand why material selection is important based on their properties. Understand the material (functional and aesthetic) properties of wood. Understand that the mechanism in an automata uses a system of cams, axles and followers. Understand that different shaped cams produce different outputs. Know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. Autumn A (Stuffed Toys) Understand that it is easier to finish simpler designs to a high standard. Autumn A (Stuffed Toys) Know that soft toys are often made by creating appendages separately and then attaching them to the main body. Autumn A (Stuffed Toys)

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	Understand that different techniques for joining materials can be used for different purposes. (Aut 2/ sum 2). Understand that a template (or fabric pattern) is used to cut out the same shape multiple times. (summer 2)		Know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely. Autumn A (Stuffed Toys)

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Food				
	EYFS	**KS1**	**LKS2**	**UKS2**
Design	Can explore existing biscuits and talk about which fillings and decorations they like. Can simply talk about what they will make. Can talk about what they will need. Can create closed shapes with continuous lines, and begin to use these shapes to represent objects in their designs. Can choose particular colours for a purpose.	Can design packaging by-hand or on ICT software. (Summer 2 dips) Can design a healthy wrap based on a food combination which work well together. (spring 1)	Can create a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish (Summer 2- seasonal dessert- Cycle B) Can design a biscuit within a given budget, drawing upon previous taste testing.(Summer 2)	Can adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. Spring 1 B(What could be healthier) Can write an amended method for a recipe to incorporate the relevant changes to ingredients. Spring 1 B (What could be healthier) Can design appealing packaging to reflect a recipe, taking into consideration their local community. Can write a recipe, explaining the key steps, method and ingredients. Spring 1 B (What could be healthier) Can include facts and drawings from research undertaken. Summer 2 A (Super Seasonal Cooking)

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Make	Can peel by hand. Can shape foods by hand and with a rolling pin. Can spread soft foods with a butter knife. Can begin to hold a knife correctly for cutting soft foods. Can measure by using a spoon and counting ingredients. Can follow instructions given one at a time by an adult. Can explore how scales can be used for measuring food.	Can identify if a food is a fruit or a vegetable. (spring 1) Can begin to use different cutting safety techniques including bridge hold, claw grip and fork secure. Focusing on soft fruit and vegetables. (spring 1) (summer 2 dipss) Can explore equipment including a peeler, squeezer and grater to prepare soft foods. (spring 1) (summer 2 dips) Can follow procedures for safety and hygiene. (spring 1 wraps) (summer 2 dips) Can follow a simple recipe with support by an adult. (spring 1) (summer 2 dips) ing to ingredients in simple fractions e.g. half. (spring 1 wraps)	Know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. Can follow the instructions within a recipe. Can follow a baking recipe, from start to finish, including the preparation of ingredients. Cooking safely, following basic hygiene rules. Can adapt a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet). Can explore equipment including a peeler, squeezer and grater to prepare firmer foods. Can use a digital and analogue scale with support to obtain accuracy. Can use different cutting safety techniques including bridge hold, claw grip and fork secure. Focusing on firmer fruit and vegetables.	Can cut and preparing vegetables safely. Spring 1 B (What could be healthier) Can use equipment safely, including knives, hot pans and hobs. Know how to avoid cross-contamination. Spring 1 B (What could be healthier) Can follow a step by step method carefully to make a recipe. Spring 1 B (What could be healthier) Can follow a recipe, including using the correct quantities of each ingredient. Spring 1 B (What could be healthier) Can adapt a recipe based on research. Can adapt by adding more or substiting one more ingredients. Spring 1 B (What could be healthier) Summer 2 A (Super Seasonal Cooking) Can work to a given timescale. Summer 2 A (Super Seasonal Cooking) Can work safely and hygienically with independence. Spring 1 B (What could be healthier) Can use a measuring jug independently and with accuracy.

				Can use digital and analogue scales independently and with accuracy Spring 1 B (What could be healthier) Can prepare and cook a variety of predominantly savoury dishes. Summer 2 A (Super Seasonal Cooking) Spring 1 B (What could be healthier) (Pasta Salad) Know how to prepare simple dishes without using a heat source. Spring 1 B (Making a pasta salad) (What could be healthier) Can select from a range of tools and equipment, explaining their choices. Summer 2 A (Super Seasonal Cooking) Constructing a wrap that meets a design brief. Can measure using different measuring spoons. Can measure by referring to savoury dishes safely and hygienically including, where appropriate, the use of a heat source.

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Evaluate	Can talk about how they made their product. Can talk about how they decorated their product. Can talk about the tools they used. Can talk about what they like about their product. Can begin to describe the taste of different fruits e.g. sweet, sour. (handa's)	Can taste and evaluate different food combinations and final products. (spring 1 wraps) Can describe appearance, smell and taste. (spring 1 wraps) Can suggest information to be included on packaging. (Summer 2 dips) Can describe the information that should be included on a label. (Summer 2 dips) Can evaluate which grip was most effective. Summer 1 A (Dips and dippers)	Can establish and use a design criteria to help test and review dishes. Can describe the benefits of seasonal fruits and vegetables and the impact on the environment. Can suggest modifications and points for improvement. Can evaluate a recipe, considering: taste, smell, texture and appearance. Can describe the impact of the budget on the selection of ingredients. Can evaluate and compare a range of products.	Can identify the nutritional differences between different products and recipes. Spring 1 B (What could be healthier) Can identify and describe healthy benefits of food groups. Spring 1 B (What could be healthier) Can evaluate a recipe, considering: taste, smell, texture and origin of the food group. Spring 1 B (What could be healthier) Can taste teste and score final products. Summer 2 A (Super Seasonal Cooking) Can suggest and write up points of improvements in productions. Summer 2 A (Super Seasonal Cooking) Can evaluate health and safety in production to minimise cross contamination. Spring 1 B (What could be healthier)

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Technical Knowledge	Can name a range of fruit and vegetables. (handa's) Know that a blender is a machine which mixes ingredients together into a smooth liquid. Understand that fruits and vegetables are grown. (handa's) Understand that tools have to be used safely. Can name some food preparation equipment and know their purpose.	Understand the difference between fruits and vegetables. (spring 1) Understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). (spring 1) Know that a fruit has seeds and a vegetable does not. (spring 1) Know that fruits grow on trees or vines. (spring 1) Know that vegetables can grow either above or below ground. (spring 1) Know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). (spring 1) Know that 'diet' means the food and drink that a person or animal usually eats. (spring 1) Understand what makes a balanced diet. (spring 1) (summer 2 dips) Know where to find the nutritional information on packaging. (spring 1) Know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and	Know that not all fruits and vegetables can be grown in the UK. Know that climate affects food growth. Know that vegetables and fruit grow in certain seasons. Know that cooking instructions are known as a 'recipe'. Know that imported food is food which has been brought into the country. Know that exported food is food which has been sent to another country. Understand that imported foods travel from far away and this can negatively impact the environment. Know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. Understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. Know safety rules for using, storing and cleaning a knife safely.	Understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. Spring 1 B (What could be healthier) Know that I can adapt a recipe to make it healthier by substituting ingredients. Spring 1 B (What could be healthier) Summer 2 A (Super Seasonal Cooking) Know that I can use a nutritional calculator to see how healthy a food option is. Understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. Spring 1 B (What could be healthier) Know that 'flavour' is how a food tastes. Summer 2 A (Super Seasonal Cooking) Know that many countries have 'national dishes' which are recipes associated with that country. Know that 'processed food' means food that has been put through multiple changes in a factory. Spring 1 B (What could be healthier)

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		foods high in fat and sugar. (spring 1) (summer 2 dips) Understand that I should eat a range of different foods from each food group, and roughly how much of each food group. (spring 1) (summer 2 dips) Know that nutrients are substances in food that all living things need to make energy, grow and develop. (spring 1) Know that 'ingredients' means the items in a mixture or recipe. (spring 1) (summer 2 dips) Know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. (spring 1) Know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars.' (spring 1)	Know that similar coloured fruits and vegetables often have similar nutritional benefits. Know that the amount of an ingredient in a recipe is known as the 'quantity'. Know that it is important to use oven gloves when removing hot food from an oven. Know the following cooking techniques: sieving, creaming, rubbing method, cooling. Understand the importance of budgeting while planning ingredients for biscuits.	Summer 2 A (Super Seasonal Cooking) Understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. Summer 2 A (Super Seasonal Cooking) Understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork). Spring 1 B (What could be healthier)