Design and Technology Curriculum Map

	Autumn Term	Spring Term	Summer Term
Nursery	**Term specific skills focus** **Structures** Introduce creating constructions in continuous provision. Exploring and selecting appropriate equipment to complete a task, for example a spoon for pumpkin scooping, scissors for cutting, rolling pin for rolling etc. Folding card to create own Christmas card designs.	**Term specific skills focus** **Structures** **Textiles** Cutting along lines and around shapes with increasing accuracy. Playdough creations and following instructions to make items. Scissor safety. Loose parts to support imaginative play and storytelling. Exploring materials and discussing how they feel. Craft activities - selecting/using tools, collage and malleable materials. Explore how Easter baskets/hats are made prior to designing and making one themselves.	**Term specific skills focus** **Structures** **Cooking and nutrition** Using different materials to make their own individual structures. Which materials do they like using? Craft activities - selecting/using tools, collage and malleable materials. Creating our own party menu – bringing in foods and making different treats that we like.
	Construction **Wooden bricks, Duplo, loose parts etc.** **Structures**		
	Develop problem solving skills during construction activities. Learn to make decisions and choices when building structures. Develop fine motor skill by engaging with construction materials. Enhance hand-eye coordination and dexterity by manipulating a variety of materials. Provide a platform for children to create and role-play scenarios. Children should begin to use language to describe their creations and communicate with others. Develop cooperation skills and the sharing of resources.		
	Prior learning		
	Birth to three Children may have experience of their own construction materials at home, such as Duplo, Lego and wooden bricks. Children may have experience of baking with their family and could have used some basic tools, such as spoons or rolling pins. Children may have had opportunities to use materials and crafts at home.	**Birth to three** Children may have had the opportunity to make specific items with their families at home, such as hats. Some adults at home may encourage role play during construction activities or between siblings.	**Birth to three** Children may have very basic experience in suggesting items for their birthday party. Some adults at home may encourage certain styles of construction or set a specific challenge for their children, for example, 'let's build a house with your Duplo bricks.'
	Key Vocabulary		
	appropriate, card(s), Christmas, construction, cutting equipment, folding, rolling, scissors, spoon	accuracy, creations, exploring, imagination, instructions loose, materials, parts, safety, storytelling	dislike, food, individual, like, malleable, nutrition, prefer structures, tasty, tools

Reception	**Introducing Me** **Introducing Autumn** **What has changed?** **Structures** Using tools e.g. scissors, glue-stick and different materials. Design and make a hibernation box. Understand what hibernation needs and why some animals hibernate.	**Christmas** **What is that light?** **Mechanisms** Using various tools to change the shape/texture of playdough. Develop folding and cutting skills. Create a picture with a simple sliding mechanism.	**Why is it cold?** **Textiles** Joining using different techniques and materials e.g. sticky tape, paper fasteners. Using single hole punch/safety stapler. Use a range of tools and techniques to create a threaded spring flower.	**Where did it come from?** **Structures** Explore different materials and techniques to effect change. Design and make an Easter item e.g. basket, hat, etc. Design and create a hanging Easter egg decoration.	**How can we help?** **Cooking and nutrition** Design a rainbow salad recipe. Create a rainbow salad and talk about the importance of healthy eating.	**Where are we going?** **Textiles** Investigating floating. Design and make a boat Paper folding to make planes, kites, etc. Basic textiles.
	Junk Modelling **Structures** Making verbal plans and material choices. Developing a junk model. Improving fine motor/scissor skills with a variety of materials. Joining materials in a variety of ways (temporary and permanent). Joining different materials together. Describing their junk model, and how they intend to put it together. Giving a verbal evaluation of their own and others' junk models with adult support. Checking to see if their model matches their plan. Considering what they would do differently if they were to do it again. Describing their favourite and least favourite part of their model.					
	Prior learning					
	Nursery Experience of building structures and using basic tools in Nursery.	**Nursery** Use of loose parts to make own mechanisms in Nursery.	**Nursery** Children will have used different textiles creating Easter hats in Nursery.	**Nursery** Children may have made an Easter creation in Nursery.	**Nursery** Children have experience of making a party menu in Nursery, and looking at basic likes and dislike, regarding food.	**Nursery** Children will have experience of selecting materials for different purposes in Nursery.
	Key Vocabulary					
	autumn, season, weather, leaves, frost, cold, brown, crunchy, wet, hibernate, hibernation, dormouse, hedgehog, black bear, bumble bee, tortoise, frog, fish	chimney, Christmas, collage, Father Christmas, length, long, permanent join, Santa, sliding mechanism, sliding picture, wide, width	down, over, pattern, pinch, pull, punch, push, thread, through, under, up	Bible, chocolate, Christian, colour, create, design, Easter, egg, Jesus, pattern, plan, shape	Adjectives, such as sweet, sour, soft, crunchy, delicious, yummy, tasty - balanced diet, body, brain, chopping board, fruit and vegetable names, healthy, healthy eating, healthy lifestyle, knife, mind	down, over, pattern, pinch, pull, push, thread, through under, up, weave

Year 1	**Building stable structures** **Structures** **Can we build a stable structure?** Recognise how products and designs in the world around us solve certain needs. Identify the needs of the user. State what they intend to make and why – identifying the purpose. Talk about existing products when generating ideas. Use basic drawing skills to communicate ideas. Choose between a small number of materials, ingredients or components. Request equipment appropriate to the purpose (e.g. scissors for cutting, glue for joining, etc.). Refine their grip to cut competently and confidently. Saying what they like about their peers' designs and products.	**Making puppets** **Textiles** **Can we follow a set of instructions to make a puppet?** Use a template to create a design for a puppet. Cut fabric neatly with scissors. Use joining methods to decorate a puppet. Sequence steps for construction. Reflect on a finished product, explaining likes and dislikes.	**Making smoothies** **Cooking and nutrition** **Can we design and make a healthy smoothie?** Design a smoothie carton packaging by hand. Chop fruit and vegetables safely to make a smoothie. Juice fruits to make a smoothie. Identify if a food is a fruit. Learn where and how fruits and vegetables grow. Taste and evaluating different foods. Describe appearance, smell and taste. Suggest information to be included on packaging.
	Prior learning		
	EYFS Junk modelling and continuous provision will provide basic problem solving skills. Experience of cutting and basic joining.	**EYFS** Children have experience of working with a variety of textiles (making Easter hats). Threading flowers.	**EYFS** Designing a party menu in Nursery. Designing a healthy salad in Reception. Basic knowledge of healthy and nutritious food.
	Key Vocabulary		
	base, better, compare, design, freestanding, stable, structure, unstable, user, worse	decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template	blend, blender, chopping board, compare, cut, design, evaluate, flavour, fork, fruit, healthy, ingredients, juice, juicer, leaf, plant, recipe, root, seed, select, smoothie, stem, table knife, taste
Year 2	**How could we make a fairground wheel?** **Mechanisms** **Fairground wheel** Describe how axles help wheels move. Describe the properties of different materials and select appropriate materials for the wheel. Build a stable structure and test elements of the design. Make the wheel rotate, evaluate a wheel mechanism and adapt it as necessary. Explain decisions. Design and evaluate fairground wheels.	**How do we keep heathy?** **Cooking and nutrition** **Balanced diet – Making a wrap** Name the main food groups and identify foods that belong to each group. Describe the taste, feel and smell of a given food. Think of three different wrap ideas, considering flavour combinations. Construct a wrap that meets the design brief and their plan.	**How can we make a pouch?** **Textiles** **Pouches** Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. Prepare and cut fabric to make a pouch from a template. Use a running stitch to join the two pieces of fabric together. Decorate their pouch using the materials provided.
	Prior Learning		
	Year 1 Investigating different mechanisms and joining techniques during the toys module.	**Year 1** Healthy snacks module. Making fruits salads. Using tools.	**EYFS** Exploring materials. Using joining techniques.
	Key Vocabulary		
	design brief, design criteria, evaluate, frame, model, opinion, rotate, survey	appearance, balanced, carbohydrates, chopping board, combination, cut, dairy, design, design brief, diet, evaluate, feel, fruit, grate, grater, ingredients, menu, oils, proteins, review, scissors, smell, snip, spread, spreads, table, knife, taste, vegetables	decorate fabric, fabric, glue, knot, needle, needle threader, running stitch, sew, template, thread

Year 3	**Can we make a pneumonic toy?** **Mechanical Systems** **Making a pneumonic toy** Understand how mechanisms work. Know that a mechanical system can allow us to move something more easily. Understand that mechanical systems can have more than one mechanism that moves to make them work. Realise that mechanical systems are often hidden in products to make them look more appealing. Understand that pneumatic systems can be found in everyday objects. Learn that pushing air can be used to move a mechanism. Understand that pivots can be used to create more movement in a mechanical system. Learn that a combination of mechanisms can improve a product.	**Can we make a Roman fort?** **Structures** **Building a Roman fort** Learn to design a castle with key features to appeal to a specific person/purpose. Draw and label a fort design using 2D shapes. Design and/or decorate a fort tower on CAD software. Construct a range of 3D geometric shapes using nets. Create special features for individual designs. Make facades from a range of recycled materials. Evaluate own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. Suggest points for modification of the individual designs.	**Can we produce an Egyptian garment?** **Textiles** **Making Egyptian collars** Design and make a template for an Egyptian collar and apply individual design criteria. Follow design criteria to create an Egyptian collar. Select and cut textiles with ease using fabric scissors. Thread needles with greater independence. Tie knots with greater independence. Sew cross stitch to decorate or join fabric. Decorate fabric using appliqué, beads (or other embellishments), ribbon and pinking scissors. Evaluate an end product.
	Prior learning		
	Year 2 Making toys with mechanisms in Year 2. Building stable structures.	**Year 1** Building stable structures. Selecting appropriate materials.	**Year 2** Making a puppet. Threading and using a needle. Working with textiles.
	Key Vocabulary		
	diagram, evaluate, feedback, housing, linkage, mechanical system, mechanism, pivot, pneumatic system, thumbnail sketch	2D, 3D, castle, design, key features, net, scoring, shape, stable, stiff, strong, structure, tab	asymmetrical, appliqué, cotton, cross-stitch, embellish, fabric, patch, pinking, polyester, running stitch, silk, symmetrical, template, thread, unique
Year 4	**Can we adapt a biscuit recipe?** **Cooking and nutrition** **Adapting biscuit recipe** Develop drawing and sketching skills with a focus on clarity and simplicity. Create prototypes using materials with similar properties to their final design. Develop designs by adding details and justifications about materials, tools and methods. Following detailed safety instructions. Investigate and analysing a range of existing products by looking at their functionality and appeal. Evaluate their designs by comparing them against design criteria and considering feedback from peers to suggest improvements.	**Can we use software to develop a mindful moments timer?** **Digital world** **Mindful moments timer** Write design criteria for a programmed timer. Applying the results of research to further inform my design criteria. Develop a prototype case for a mindful moment timer. Use and manipulate shapes and clipart by using computer-aided design (CAD), to produce a logo. Follow a list of design requirements. Create a 3D using modelling materials. Evaluate a program against points on a design criteria and amend them to include any changes made. Understand what a logo is and why they are important in the world of design and business. Test a program for bugs (errors in the code). Find and fix bugs (debug) in code.	**Can we design and make a mechanical car?** **Mechanical systems** **Mechanical cars** Evaluate and compare a range of products. Follow a baking recipe. Understand safety and hygiene rules. Identify a target audience. Design a biscuit within a given budget. Suggest modifications. Adapt a recipe. Conduct market research. Evaluate an adapted recipe.
	Prior learning		
	Year 3 Children have designed and made their own healthy wrap in Year 3. They also have experience in evaluating their food products.	**Year 3** Children used basic CAD software to design parts of their Roman forts.	**Year 2 and Year 3** Children have experience of designing and making toys with mechanisms and moving parts.
	Key Vocabulary		
	bearing, chassis, force, machine, mechanism, prototype, target audience	advantage, aesthetic, annotate, assemble, block, brand, brand identity, bug, clipart, coding, computer-aided design (CAD), criteria, debug, design, develop, disadvantage, display, ergonomic, evaluate, exhibition, feedback, form, function, join	adapt, addition, appearance, budget, buttery, combine, comment, compare, construct, cream, crunchy, cuboid, cut, design, evaluate, fold, hygiene, ingredients, layout, market research, modify, multiplication, opinion, pounds

Year 5	**Can we advance our designs by incorporating gears and pulleys?** **Mechanical systems** **Gears and pulleys** Identify a wide range of needs and potential barriers through market research. Begin to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. Use a series of prototypes to refine and improve their designs. Consistently apply safety instructions. In supervised groups, use hot glue guns safely. Assess their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Incorporate feedback from peers or users to improve their product further, explaining the changes they made and the impact they had.	**Can we build a strong and stable bridge?** **Structures** **Building bridges** Design a stable structure that is able to support weight. Create a frame structure with focus on triangulation. Make a range of different shaped beam bridges. Use triangles to create truss bridges that span a given distance and support a load. Build a wooden bridge structure. Independently measure and mark wood accurately. Select appropriate tools and equipment for particular tasks. Use the correct techniques to saw safely. Explain why selecting appropriate materials is an important part of the design process. Suggest points for improvements for own bridges and those designed by others.	**Can we develop and follow a Bolognese recipe?** **Cooking and nutrition** **Developing a recipe – Bolognese** Explain the farm-to-fork process. Research existing recipes. Suggest alternative ingredients. Analysing nutritional content. Write an alternative recipe. Understand cross-contamination. Use preparation skills. Design a jar label. Make a developed recipe.
	Prior learning		
	Year 2, Year 3 and Year 4 Children have experience of designing and making toys with mechanisms, pneumatics and moving parts.	**Year 1 and Year 3** Building stable structures. Selecting appropriate materials to create strength within a structure.	**Year 2 and Year 4** Children have designed and made their own healthy wrap in Year 2. Children have adapted biscuit recipes in Year 4.
	Key Vocabulary		
	annotate, axle, force, gear, gear system, input, machine, market research, mechanism, output, problem statement, pulley, pulley system, renewable energy, research, sustainability, teeth	accuracy, aesthetics, arch bridge, assemble, beam bridge, bench hook/vice, coping saw, corrugation, evaluate, factors, glass paper, hardwood, joints, lamination, mark out, material properties, quality of finish, reinforce, rigid, sandpaper, softwood, stability, stiffness, strength, technique, tenon saw	abattoir, adaptation, balanced, beef, brand, cook, cross-contamination, cut, design, enhance, equipment, evaluate, farm, grate, hygiene, ingredients, label, measure, nutrient, nutrition, nutritional value, preference, press, process
Year 6	**Can we program a digital compass?** **Digital World** **Navigating the world** Write a design brief from information submitted by a client. Develop a design criteria to fulfil the client's request. Develop a product idea through annotated sketches. Place and manoeuvre 3D objects, using CAD. Change the properties of, or combine one or more 3D objects, using CAD. Consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). Explain material choices and why they were chosen as part of a product concept. Program a North, East, South, West cardinal compass. Explain how my program fits the design criteria and how it would be useful as part of a navigation tool.	**Can we design a three course meal?** **Cooking and nutrition** **Come dine with me** Write a recipe, explaining the key steps, method and ingredients. Include facts and drawings from research undertaken. Follow a recipe, including using the correct quantities of each ingredient. Adapt a recipe based on research. Work to a given timescale. Work safely and hygienically with independence. Evaluate a recipe, considering: taste, smell, texture and origin of the food group. Taste test and scoring final products. Suggest and write up points of improvements in productions. Evaluate health and safety in production to minimise cross contamination.	**Can we design and make our very own playground?** **Structures** **Making playgrounds** Design a playground featuring a variety of different structures, giving consideration to how the structures will be used. Consider effective and ineffective designs. Build a range of play apparatus structures drawing upon new and prior knowledge of structures. Measure, mark and cut wood to create a range of structures. Use a range of materials to reinforce and add decoration to structures. Improve a design plan based on peer evaluation. Test and adapting a design to improve it as it is developed. Identify what makes a successful structure.

	Prior learning		
	Year 3 and Year 4 Children used basic CAD software to design parts of their Roman forts. Children programed digital timers in Year 4 and debugged any problems afterwards.	**Year 2 and Year 4** Children have designed and made their own healthy wrap in Year 2. Children have adapted biscuit recipes in Year 4 and followed a Bolognese recipe in Year 5.	**Year 5** Children have brought together their structural knowledge to build bridges in Year 5.
	Key Vocabulary		
	application (apps), biodegradable, cardinal compass, client, corrode, design brief, design criteria, duplicate, environmentally friendly, equipment, function, GPS tracker, statement, lightweight, loop, moudable, navigation, pedometer, product lifecycle, product lifespan, program, recyclable, replica	balance, bitter, bridge method, complement, cookbook cross-contamination, enhance, equipment, farm to fork, flavours, ingredients, method, pairing, preparation, recipe, research, salty, sour, storyboard, sweet	apparatus, cladding, design criteria, equipment, landscape features, playground