St.Mark's CofE Primary School
Design and Technology Progression of Skills

EYFS	Through Direct teaching, Enhanced and Continuous Provision, the children in the Early Years will have the opportunity to develop the follow Design and Technology Skills:		
	DESIGN **Linked to Understanding the World:** To make observations about the features of objects. To use their senses to explore and describe objects. To think of some ideas of their own. **Linked to Creating with materials** To choose how best to approach a task. To create closed shapes with continuous lines, and begin to use these shapes to represent objects. To draw with increasing complexity and detail, such as representing a face with a circle and including details.	**MAKE** **Linked to Communication and Language:** To explain what they are making. To explain which tools they are making and why. To create collaboratively sharing ideas, resources and skills. **Linked to Creating with materials** To select appropriate resources and tools. To use tools to manipulate materials. To be able to use scissors effectively to cut in a straight line and around a shape. To explore joining techniques while creating - e.g. folding, gluing, masking tape.	**EVALUATE** **Characteristics of Effective Learning:** To identify success and next steps. To check how well their activity is going. To change their strategy as needed. To review how well their approach worked? To return to and build on their previous learning, refining ideas and developing their ability to represent them.

		To join different materials and explore different textures. To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and functio **Linked to Physical Development (Fine Motor Control)** To begin to show accuracy and care when drawing a design. To use a range of small tools safely and effectively	

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	Structure	Mechanisms/Mechanical Structures	Food and Nutrition	Textiles	Electrical Systems
Year 1	**Design:** To use a template to create a design.	**Design:** To design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move To create clearly labelled drawings which illustrate movement	**Design:** • Designing smoothie carton packaging by-hand or on ICT software	**Design:** -To use a template to create a design.	N/A
	Make: Make stable structures using card, tape and glue Turning 2D nets into 3D structures Following instructions to cut and assemble supporting structures Making functioning turbines and axles	**Make:** To adapt mechanisms	**Make:** • Chopping fruit and vegetables safely to make a smoothie • Identifying if a food is a fruit or a vegetable • Learning where and how fruits and vegetables grow	**Make:** -Cutting fabric neatly with scissors • Using joining methods to decorate a puppet • Sequencing steps for construction	
	Evaluate: Testing strength and stability of the structure Suggest points for improvement and say what I like	**Evaluate:** Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move	**Evaluate:** • Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be	**Evaluate:** Reflecting on a finished product, explaining likes and dislikes	

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			included on packaging		
	Technical Knowledge: • To understand that the shape of materials can be changed to improve the strength and stiffness of structures • To understand that cylinders are a strong type of structure • To understand that axles are used in structures and mechanisms to make parts turn in a circle • To begin to understand that different structures are used for different purposes • To know that a structure is something that has been made and put together	**Technical Knowledge:** To know that wheels need to be round to rotate and move • To understand that for a wheel to move it must be attached to a rotating axle • To know that an axle moves within an axle holder which is fixed to the vehicle or toy • To know that the frame of a vehicle (chassis) needs to be balanced	**Technical Knowledge:** • Understanding the difference between fruits and vegetables • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber) • To know that a blender is a machine which mixes ingredients together into a smooth liquid • To know that a fruit has seeds and a vegetable does not • To know that fruits grow on trees or vines • To know that vegetables can grow either above or below ground • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber)	**Technical KNowledge:** • To know that 'joining technique' means connecting two pieces of material together • To know that there are various temporary methods of joining fabric by using staples. glue or pins • To understand that different techniques for joining materials can be used for different purposes • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times • To know that drawing a design idea is useful to see how an idea will look	

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Year 2		**Design:** Creating a class design criteria for a moving monster Designing a moving monster for a specific audience in accordance with a design criteria	**Design:** • Designing a healthy wrap based on a food combination which work well together	**Design**:Generating and communicating ideas using sketching :	N/A
		Make: Making linkages using card for levers and split pins for pivots • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used • Cutting and assembling components neatly	**Make:** • Slicing food safely using the bridge or claw grip • Constructing a wrap that meets a design brief	**Make:** Selecting and cutting fabrics for sewing • Decorating a pouch using fabric glue or running stitch • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template	
		Evaluate: Evaluating own designs against design criteria • Using peer feedback to modify a final design	**Evaluate:** • Describing the taste, texture and smell of fruit and vegetables • Taste testing food combinations and final products • Describing the information that should	**Evaluate:** Troubleshooting scenarios posed by teacher • Evaluating the quality of the stitching on others' work • Discussing as a class, the success of their	

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			be included on a label • Evaluating which grip was most effective	stitching against the success criteria • Identifying aspects of their peers' work that they particularly like and why	
		Technical Knowledge: • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement • To know that there is always an input and output in a mechanism • To know that an input is the energy that is used to start something working • To know that an output is the movement that happens as a result of the input • To know that a lever is something that turns on a pivot • To know that a linkage mechanism is made up of a series of levers	**Technical Knowledge:** • To know that 'diet' means the food and drink that a person or animal usually eats • To understand what makes a balanced diet • To know where to find the nutritional information on packaging • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group • To know that nutrients are substances in food	**Technical Knowledge:**To know that sewing is a method of joining fabric • To know that different stitches can be used when sewing • To understand the importance of tying a knot after sewing the final stitch • To know that a thimble can be used to protect my fingers when sewing :	

			that all living things need to make energy, grow and develop • To know that 'ingredients' means the items in a mixture or recipe • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'		
Year 3		**Design:** • Designing a toy which uses a pneumatic system • Developing design criteria from a design brief • Generating ideas using thumbnail sketches and exploded diagrams • Learning that different types of drawings are used in design to	**Design:** • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish	**Design**: Designing and making a template from an existing product and apply individual design Criteria	

		explain ideas clearly			
		Make: • Creating a pneumatic system to create a desired motion • Building secure housing for a pneumatic system • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy • Selecting materials due to their functional and aesthetic characteristics • Manipulating materials to create different effects by cutting, creasing, folding, weaving	**Make:** • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination • Following the instructions within a recipe	**Make**: Following design criteria • Selecting and cutting fabrics with ease using fabric scissors • Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch to join fabric • Decorating fabric using appliqué • Completing design ideas with stuffing and sewing the edges	
		Evaluate: • Using the views of others to improve	**Evaluate:** • Establishing and using design criteria to help	**Evaluate**: Evaluating an end product and thinking of	

		designs • Testing and modifying the outcome, suggesting improvements • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client	test and review dishes • Describing the benefits of seasonal fruits and vegetables and the impact on the environment • Suggesting points for improvement when making a seasonal tart	other ways in which to create similar items	
		Technical Knowledge: • To understand how pneumatic systems work • To understand that pneumatic systems can be used as part of a mechanism • To know that pneumatic systems operate by drawing in, releasing and compressing air	**Technical Knowledge:** • To know that not all fruits and vegetables can be grown in the UK • To know that climate affects food growth • To know that vegetables and fruit grow in certain seasons • To know that cooking instructions are known as a 'recipe' • To know that imported food is food which has been brought into the country • To know that exported food is food which has been sent to another country. • To understand that	**Technical KNowledge:** •To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric •To know that when two edges of fabric have been joined together it is called a seam •To know that it is important to leave space on the fabric for the seam •To understand that some products are turned inside out after sewing so the stitching is hidden	

			imported foods travel from far away and this can negatively impact the environment • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health • To know safety rules for using, storing and cleaning a knife safely • To know that similar coloured fruits and vegetables often have similar nutritional benefits		
Year 4	**Design:** • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect • Building frame		**Design:** • Designing bread within a given budget, drawing upon previous taste testing	**Design**: To write design criteria for a product, articulating decisions made.	

	structures from a given design to support weight				
	Make: • Creating a range of different shaped frame structures • Making a variety of free standing frame structures of different shapes and sizes • Selecting appropriate materials to build a strong structure and for the cladding • Reinforcing corners to strengthen a structure • Creating a design in accordance with a plan • Learning to create different textural effects with materials		**Make:** • Following a baking recipe • Cooking safely, following basic hygiene rules • Adapting a recipe	**Make**: • Making and testing a paper template with accuracy and in keeping with the design criteria • Measuring, marking and cutting fabric using a paper template • Selecting a stitch style to join fabric, working neatly sewing small neat stitches • Incorporating fastening to a design	
	Evaluate: • Evaluating structures made by the class • Describing what characteristics of a design and construction made it the most effective		**Evaluate:** • Evaluating a recipe, considering: taste, smell, texture and appearance • Describing the impact of the budget on the selection of ingredients	**Evaluate**: • Testing and evaluating an end product against the original design criteria • Deciding how many of the criteria should be met for the product to	

	• Considering effective and ineffective designs		• Evaluating and comparing a range of products • Suggesting modifications	be considered successful • Suggesting modifications for improvement • Articulating the advantages and disadvantages of different fastening types	

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	Technical Knowledge: • To understand what a frame structure is • To know that a 'free-standing' structure is one which can stand on its own		**Technical Knowledge:** • To know that the amount of an ingredient in a recipe is known as the 'quantity' • To know that it is important to use oven gloves when removing hot food from an oven • To know the following cooking techniques: sieving, creaming, rubbing method, cooling •To understand the importance of budgeting while planning ingredients for biscuits	**Technical Knowledge**: -To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro • To know that different fastening types are useful for different purposes • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions	
Year 5	**Design**: • Designing a stable structure that is able to support weight • Creating frame structure with focus on		**Design:** • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or	**Design:** • Designing a product considering the main component shapes required and creating an	

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	triangulation		add additional ingredients • Writing an amended method for a recipe to incorporate the relevant changes to ingredients • Designing appealing packaging to reflect a recipe	appropriate template • Considering the proportions of individual components	
	Make: Making a range of different shaped beam bridges • Using triangles to create truss bridges that span a given distance and supports a load • Building a wooden bridge structure • Independently measuring and marking wood accurately • Selecting appropriate tools and equipment for particular tasks • Using the correct techniques to saws safely • Identifying where aMechanMech structure needs		**Make:** • Cutting and preparing vegetables safely • Using equipment safely, including knives, hot pans and hobs • Knowing how to avoid cross-contamination • Following a step by step method carefully to make a recipe	**Make:** • Creating a 3D product from a 2D design • Measuring, marking and cutting fabric accurately and independently • Creating strong and secure blanket stitches when joining fabric • Threading needles independently • Using applique to attach pieces of fabric decoration • Sewing blanket stitch to join fabric • Applying blanket stitch so the space between the stitches are even and regular	

	reinforcement and using card corners for support • Explaining why selecting appropriating materials is an important part of the design process • Understanding basic wood functional properties				
	Evaluate: • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary • Suggesting points for improvements for own bridges and those designed by others		**Evaluate:** • Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups	**Evaluate**: • Testing and evaluating an end product and giving point for further improvements	
	Technical Knowledge: • To understand some different ways to reinforce structures • To understand how triangles can be used to reinforce bridges • To know that properties are words		**Technical Knowledge:** • To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues	**Technical Knowledge:** • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric • To understand that it is easier to finish simpler	

	that describe the form and function of materials • To understand why material selection is important based on their properties • To understand the material (functional and aesthetic) properties of wood		• To know that I can adapt a recipe to make it healthier by substituting ingredients • To know that I can use a nutritional calculator to see how healthy a food option is • To 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	designs to a high standard • To know that soft toys are often made by creating appendages separately and then attaching them to the main body • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely	
Year 6	**Design:** • Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs	**Design:** •Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement • Understanding how linkages change the direction of a force • Making things move at the same time	**Design:** • Writing a recipe, explaining the key steps, method and ingredients • Including facts and drawings from research undertaken		**Design** • Drawing a design from three different perspectives • Generating ideas through sketching and discussion • Modelling ideas through prototypes • Understanding the purpose of products (toys), including what is meant by 'fit for

		• Understanding and drawing cross-sectional diagrams to show the inner-working			purpose' and 'form over function'
	Make: • Building a range of play apparatus structures drawing upon new and prior knowledge of structures • Measuring, marking and cutting wood to create a range of structures • Using a range of materials to reinforce and add decoration to structures	**Make:** • Measuring, marking and checking the accuracy of the jelutong and dowel pieces required • Measuring, marking and cutting components accurately using a ruler and scissors • Assembling components accurately to make a stable frame • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set	**Make:** • Following a recipe, including using the correct quantities of each ingredient • Adapting a recipe based on research • Working to a given timescale • Working safely and hygienically with independence		**Make**: • Constructing a stable base for a game • Accurately cutting, folding and assembling a net • Decorating the base of the game to a high quality finish • Making and testing a circuit Incorporating a circuit into a base

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	Evaluate: • Improving a design plan based on peer evaluation • Testing and adapting a design to improve it as it is developed • Identifying what makes a successful structure	**Evaluate:** • Evaluating the work of others and receiving feedback on own work • Applying points of improvements • Describing changes they would make/do if they were to do the project again	**Evaluate:** • Evaluating a recipe, considering: taste, smell, texture and origin of the food group • Taste testing and scoring final products • Suggesting and writing up points of improvements in productions • Evaluating health and safety in production to minimise cross contamination		**Evaluate**: • Testing own and others finished games, identifying what went well and making suggestions for improvement • Gathering images and information about existing children's toys • Analysing a selection of existing children's toys
	Technical Knowledge: • To know that structures can be strengthened by manipulating materials and shapes	**Technical Knowledge:** • To understand that the mechanism in an automata uses a system of cams, axles and followers • To understand that different shaped cams produce different outputs	**Technical Knowledge:** • To know that 'flavour' is how a food or drink tastes • To know that many countries have 'national dishes' which are recipes associated with that country • To know that 'processed food' means food that has been put through multiple changes in a factory • To understand that it is		**Technical Knowledge:** -To know that batteries contain acid, which can be dangerous if they leak • To know the names of the components in a basic series circuit including a buzzer

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			important to wash fruit and vegetables before eating to remove any dirt and insecticides • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork)		