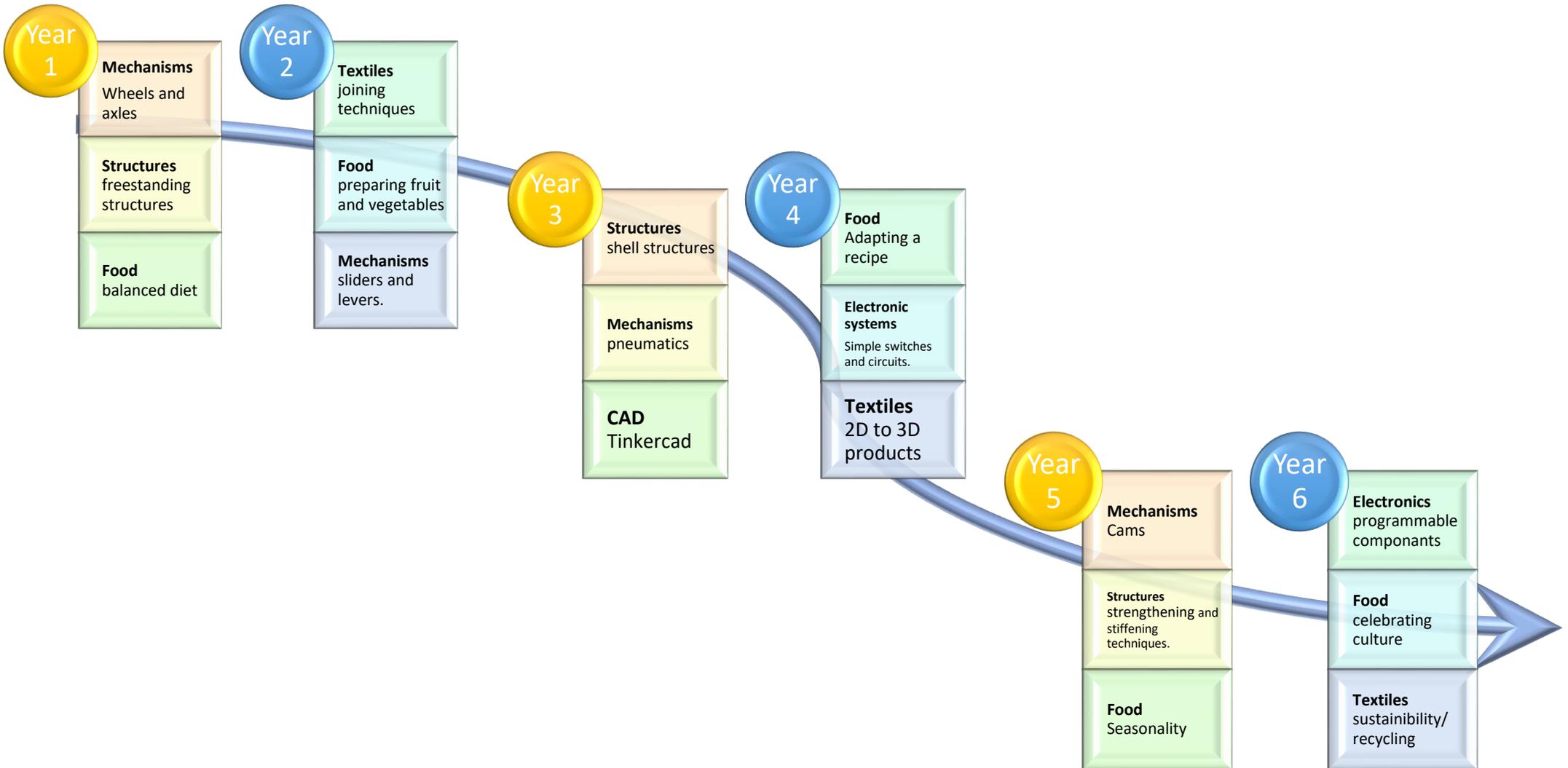




St. Joseph's Catholic Primary School
Science Progression of Knowledge and Skills

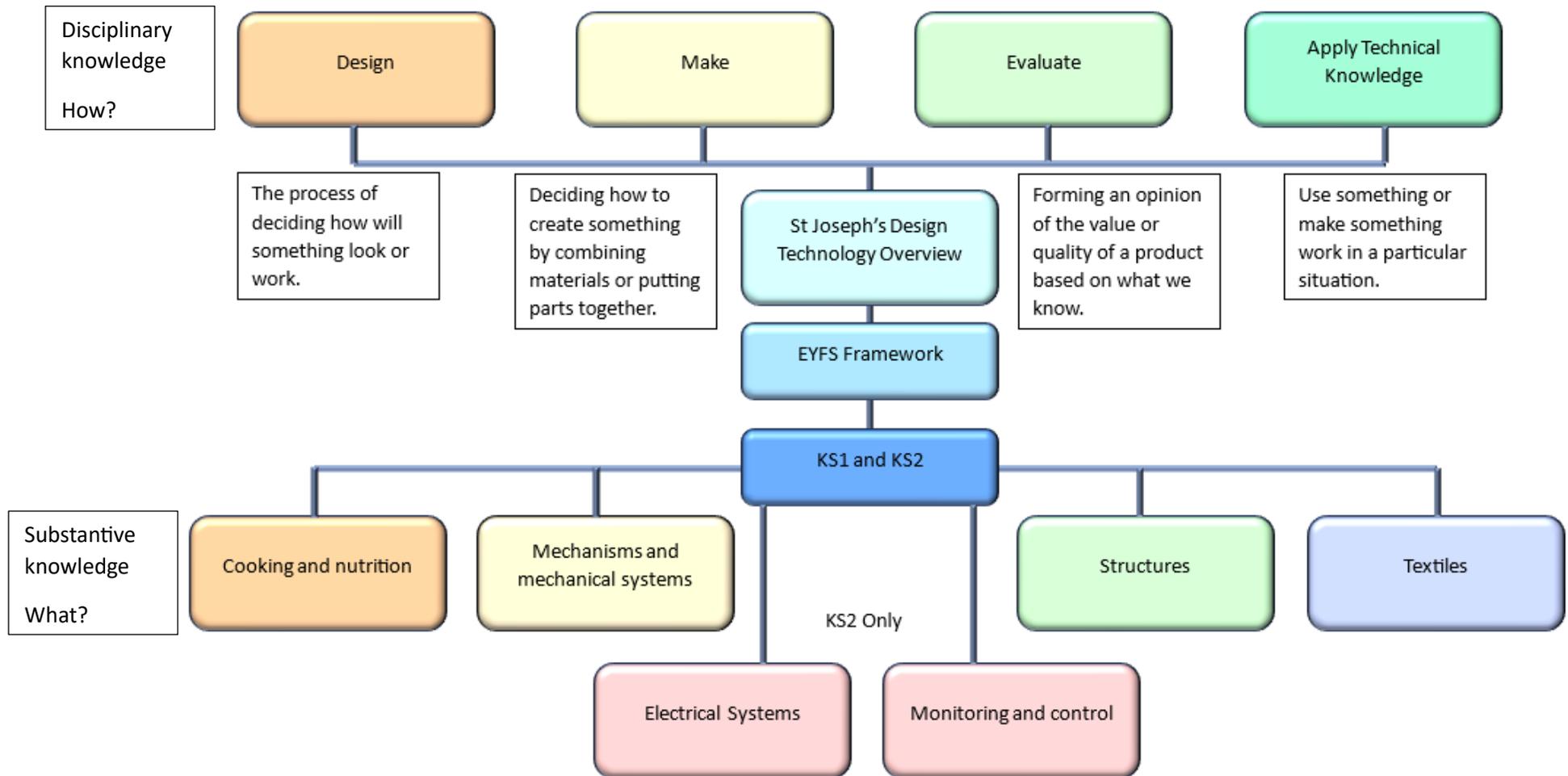


Our Design and Technology Learning Journey: Years 1 to 6



- **Substantive knowledge** (know what) - this is the subject knowledge and explicit vocabulary used to learn about the content of each unit of work.
- **Disciplinary knowledge** (know how) - their knowledge about *how* designers investigate existing products/ designs and *how* they design and produce their own products. It is through this disciplinary knowledge that pupils will steadily become more expert by thinking like a designer.

Units of work are informed by the National Curriculum and are sensitive to children’s interests and popular culture. The curriculum at St Joseph’s is planned to ensure that the learning of skills is progressive and builds upon previous knowledge. High quality learning is developed through engagement in **designing, making,** and **evaluative** activities, alongside appropriate vocabulary and **technical knowledge**.



PROGRESSION OF KNOWLEDGE AND SKILLS: DESIGN AND TECHNOLOGY

		Nursery					
		Autumn 1 I am Special	Autumn 2 Festivals and Celebrations	Spring 1 Bears	Spring 2 Growing	Summer 1 Who's at the zoo?	Summer 2 People Who Help Us.
Three and Four-Year-Olds	Personal, Social and Emotional Development	<ul style="list-style-type: none"> Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. 					
	physical Development	<ul style="list-style-type: none"> Use large-muscle movements to wave flags and streamers, paint and make marks. Choose the right resources to carry out their own plan. Use one-handed tools and equipment, for example, making snips in paper with scissors. 					
	Understanding the World	<ul style="list-style-type: none"> Explore how things work. 					
	Expressive arts and Design	<ul style="list-style-type: none"> Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them Create closed shapes with continuous lines, and begin to use these shapes to represent objects. 					
Reception		Reception					

Cooking with apples (apple crumble or apple cakes).
Learning about and using different equipment with support and how to follow a recipe.

Painting self-portraits.

Drawing their family.

Make Diya lamps for Diwali using clay.

Exploring a range of joining techniques and painting techniques, alongside cutting skills, to create Christmas crafts.

Making stir fry for Chinese New Year.

Use forks to create bear paintings.

Making pancakes.

Design a beanstalk – choose resources and draw a plan before making.

Exploring painting techniques and tools to create Spring time display.

Using bubble wrap, rolling pins and paint alongside their cutting skills to create a snake.

Plan and create their own superhero using a range of vegetables (linked to Supertato).

Using junk modelling to create their own emergency vehicle.

			<ul style="list-style-type: none"> Progress towards a more fluent style of moving, with developing control and grace. Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor. 	Autumn 1 Ourselves	Autumn 2- Light and Dark	Spring 1 Space	Spring 2 Growing	Summer 1 Minibeasts	Summer 2 Seaside
	Expressive arts and Design		<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. 	<ul style="list-style-type: none"> Looking at food choices at lunchtime. Design, make and evaluate a house for Rosie. 	<ul style="list-style-type: none"> Make Diva lamps from dough Making 'owl vision' to compare with our eyesight. 	<ul style="list-style-type: none"> Chinese New year – cooking stir fry(using graters, knives, and hob. Investigating which material baby bear should make a helmet from Making sandwiches and healthy snack bar for a picnic with Baby Bear Design, make and evaluate a rocket. 	<ul style="list-style-type: none"> Cooking pancakes Making butter in a jar. 	<ul style="list-style-type: none"> Making a ladybird from clay 	<ul style="list-style-type: none"> Making a healthy packed lunch Design, make and evaluate a boat
ELG	Physical Development	Fine Motor Skills	<ul style="list-style-type: none"> Use a range of small tools, including scissors, paintbrushes and cutlery. 						
	Expressive arts and Design	Creating with Materials	<ul style="list-style-type: none"> Safely 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. 						

Key Stage 1 Knowledge End Points (National Curriculum)	Year 1			
		Autumn Term	Spring Term	Summer Term
Key Stage One: National Curriculum End Points	Topic	Mechanisms – Wheels and axles	Structures – Free standing structures	Food – A balanced diet
<p>Design Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing.</p> <p>They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].</p> <p>Children design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p>	<p>Key Knowledge</p> <ul style="list-style-type: none"> To know that a mechanism is the parts of an object that move together. To understand that axles are used in structures and mechanisms to make parts turn in a circle. 	<ul style="list-style-type: none"> To know that materials can be manipulated to improve strength and stiffness To know that a structure is something which has been formed or made from parts To know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move To know that a ‘strong’ structure is one which does not break easily To know that a ‘stiff’ structure or material is one which does not bend easily 	<ul style="list-style-type: none"> To understand 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 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) 	
<p>Make Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of making.</p> <p>Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p> <p>They select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p>	<p>Key Skills</p> <ul style="list-style-type: none"> Learning the importance of a clear design criteria. Following a design to create moving vehicles. Making functioning axles which are assembled into a main supporting structure of a vehicle. Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. 	<ul style="list-style-type: none"> Learning the importance of a clear design criteria. Including individual preferences and requirements in a design. Making a structure according to design criteria Creating joints and structures from paper/card and tape Building a strong and stiff structure by folding paper To evaluate the effectiveness of a design and suggest ways it could be improved. 	<ul style="list-style-type: none"> Designing fruit kebab carton packaging by hand or on ICT software. Chopping fruit and vegetables safely. Identifying whether a food is a fruit or a vegetable. Tasting and evaluating different food combinations. Describing appearance, smell and taste. Suggesting information to be included on packaging. 	

<p>Evaluate</p> <p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.</p> <p>Children explore and evaluate a range of existing products. They evaluate their ideas and products against design criteria.</p> <p>Technical knowledge</p> <p>Children build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>They explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p>Food and Nutrition</p> <p>Children use the basic principles of a healthy and varied diet to prepare dishes</p> <p>Children understand where food comes from.</p>				
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Key Stage 1 Knowledge End Points (National Curriculum)	Year 2			
		Autumn Term	Spring Term	Summer Term
Key Stage One: National Curriculum End Points	Topic	Textiles – Templates and joining techniques	Food – Preparing fruit and vegetables	Mechanism – Sliders and Levers
<p>Design Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing.</p> <p>They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].</p> <p>Children design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p> <p>Make Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of making.</p> <p>Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 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 foods and drinks we do not expect to contain sugar do; we call these ‘hidden sugars.’ 	<ul style="list-style-type: none"> To know that a mechanism is the parts of an object that move together. To know that a slider mechanism moves an object from side to side. To know that a slider mechanism has a slider, slots, guides and an object. To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.

<p>They select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p>	<p>Key Skills</p>	<ul style="list-style-type: none"> • Designing a puppet. • Selecting and cutting fabrics for sewing. • Decorating a puppet 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. • Troubleshooting scenarios posed by teacher. • Evaluating the quality of the stitching on others' work. 	<ul style="list-style-type: none"> • Designing a healthy wrap based on a food combination which works well together. • Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief. • Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating which grip was most effective. 	<ul style="list-style-type: none"> • Designing a moving story book for a given audience. • Explaining how to adapt mechanisms, using bridges or guides to control the movement. • Following a design to create moving models that use levers and sliders. • Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience.
<p>Evaluate Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.</p> <p>Children explore and evaluate a range of existing products. They evaluate their ideas and products against design criteria.</p> <p>Technical knowledge</p> <p>Children build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>They explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p>Food and Nutrition</p> <p>Children use the basic principles of a healthy and varied diet to prepare dishes</p> <p>Children understand where food comes from.</p>		<ul style="list-style-type: none"> • Discussing as a class, the success of their stitching against the success criteria. • Identifying aspects of their peers' work that they particularly like and why. 		

Lower Key Stage 2 Knowledge End Points (National Curriculum)	Year 3			
		Autumn Term	Spring Term	Summer Term
Key Stage One: National Curriculum End Points	Topic	Structures – shell structures	Mechanisms – Pneumatics	CAD –Tinker CAD
<p>Design Children should begin to 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</p> <p>Children begin to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Make Children should begin to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>Children should begin to 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</p> <p>Evaluate Children should investigate and analyse a range of existing products</p>	<p>Key Knowledge</p> <ul style="list-style-type: none"> To understand that wide and flat based objects are more stable. To understand the importance of strength and stiffness in structures. To know the features of a gift box and their purpose. To know that a facade is the front of a structure. To understand that a gift box needs to be strong and stable to protect its contents. 	<ul style="list-style-type: none"> To understand how pneumatic systems work and why they are used. To know that pneumatic systems are used in a range of everyday products. To know that pneumatic systems can be used as part of a mechanism. To be able to identify the components of different types of pneumatic systems and their function. To understand what an exploded diagram is. 	<ul style="list-style-type: none"> To understand what a design brief is and use it to analyse a task design. To know what product analysis is and use it to identify form and function of a product. To understanding and apply an understanding of a computing to program, monitor and control their products Develop a vocabulary that can help to express ideas. 	
	<p>Key Skills</p>	<ul style="list-style-type: none"> Designing a gift box with key features to appeal to a specific person/purpose. Drawing and labelling a gift box design using 2D shapes. Designing and/or decorating a gift box on CAD software. Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design. 	<ul style="list-style-type: none"> Research similar products to develop own design ideas. Identify a design criteria and target audience. Develop a design through discussion and annotated sketches to add detail to designs. Select from and use a wider range of materials and equipment safely. Prove that a design meets some set criteria and evaluate how well it works. Evaluate products and suggest points for modification and improvement. 	<ul style="list-style-type: none"> Design an Avatar and describe its physical attributes through annotated sketches. Create a 2D representation of a character using papercraft materials. Create a 3D representation of a character within Tinkercad. Use mathematical computation to solve real-world problems. Introduce their avatar and explain the traits that the avatar has and how their planning helped them create their 3D model.

<p>Children should evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Children should begin to understand how key events and individuals in design and technology have helped shape the world</p> <p>Technical knowledge Children should begin to apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>Children should understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Children should begin to understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Children should begin to apply their understanding of computing to program, monitor and control their products</p> <p>Food and Nutrition Children understand and apply the principles of a healthy and varied diet</p> <p>Children prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p> <p>Children understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>		<ul style="list-style-type: none">• Suggesting points for modification of the individual designs.		
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Lower Key Stage 2 Knowledge End Points (National Curriculum)	Year 4			
		Autumn Term	Spring Term	Summer Term
Key Stage One: National Curriculum End Points	Topic	Textiles – 2D to 3D products	Food – Adapting a recipe	Electrical systems – Simple circuits and switches.
<p>Design Children should begin to 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</p> <p>Children begin to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Make Children should begin to select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>Children should begin to 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</p> <p>Evaluate Children should investigate and analyse a range of existing products</p> <p>Children should evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Children should begin to understand how key events and individuals in design and technology have helped shape the world</p> <p>Technical knowledge Children should begin to apply their understanding of how to strengthen,</p>	<p>Key Knowledge</p> <ul style="list-style-type: none"> To know that appliqué 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. 	<ul style="list-style-type: none"> To know how to follow a basic recipe. To know how to create and use a budget. To know and use basic food safety and hygiene rules. To know how to accurately measure quantities of ingredients. To use food preparation techniques e.g. sieving, rubbing, rolling and cutting. 	<ul style="list-style-type: none"> To understand that electrical conductors are materials which electricity can pass through. To understand what variables are. To know some of the features of a simple circuit. To understand that electrical insulators are materials which electricity cannot pass through. To know that a battery contains stored electricity that can be used to power products. To know that an electrical circuit must be complete for electricity to flow. To know that a switch can be used to complete and break an electrical circuit 	
	Key Skills	<ul style="list-style-type: none"> Designing and making a template from an existing decoration and applying individual design criteria. Following design criteria to create a decoration. 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. Evaluating an end product and thinking of other ways in which to create similar items. 	<ul style="list-style-type: none"> To evaluate an existing biscuit product considering: taste, smell, texture, appearance, packaging, target audience Create a design and recipe considering a budget. Design and make packaging for the final product. use the ingredient quantities specified in our budget Make and bake a biscuit that meets a given design criteria, considering safety and hygiene when baking. Evaluate and explain how a recipe can be improved. 	<ul style="list-style-type: none"> Evaluating existing electrical products. Designing a light up sign, giving consideration to the target audience and creating both design criteria focusing on features of individual design ideas Making a light up sign with a working electrical circuit and switch. Using appropriate equipment to cut and attach materials. Assembling a case structure and light according to the design and success criteria. Testing and evaluating the success of a final product.

<p>stiffen and reinforce more complex structures</p> <p>Children should understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Children should begin to understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Children should begin to apply their understanding of computing to program, monitor and control their products</p> <p>Food and Nutrition</p> <p>Children understand and apply the principles of a healthy and varied diet</p> <p>Children prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p> <p>Children understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>				
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Upper Key Stage 2 Knowledge End Points (National Curriculum)	Year 5			
		Autumn Term	Spring Term	Summer Term
Key Stage One: National Curriculum End Points	Topic	Mechanisms - Cams	Structures – strengthening and stiffening	Food - Seasonality
<p>Design Children 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</p> <p>Children generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Make Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>Children 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</p> <p>Evaluate Children investigate and analyse a range of existing products</p> <p>Children evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Children understand how key events and individuals in design and technology have helped shape the world</p> <p>Technical knowledge</p>	<p>Key Knowledge</p> <ul style="list-style-type: none"> How movement can be created with cams mechanisms. Identify the components of a cams mechanism. How to handle and use a range of tools safely and correctly. To identify where cams used in the real world. How cams can be used to make a toy move in different ways e.g. linear/rotary and reciprocal motion. To know that a prototype is a cheap model to test a design idea <p>Key Skills</p> <ul style="list-style-type: none"> Designing a toy that uses cams to create linear, reciprocal and/or rotary movement. Consider the both the functional and decorative attributes in in a finished product. Drawing an exploded diagram and labelling functional and decorative attributes. Choosing shapes that increase or decrease speed of the motion Choosing from a wide range of materials to construct a toy. Working safely with a range of tools and materials. Measuring, marking, cutting and assembling with increasing accuracy. Making a model based on a chosen design; testing and evaluating throughout. Trouble shooting problems as they occur. 	<ul style="list-style-type: none"> To understand the forces that act upon bridge structures and how to counteract them through different design features. To understand how different bridge shapes effect the strength and stability of a structure. To know that structures can be strengthened by manipulating materials and shapes. To understand how triangulation can be used to strengthen and stiffen a structure. To know that a prototype is a cheap model to test a design idea <p>Researching and testing different bridge designs.</p> <p>Considering effective and ineffective bridge designs for a given design criteria.</p> <p>Designing a strong and stable bridge structure drawing upon prior knowledge and research.</p> <p>Building a strong and stable bridge structures drawing upon new and prior knowledge of structures.</p> <p>Measuring, marking and cutting materials to create a strong and stable structure.</p> <p>Using a range of materials to reinforce and add decoration to structures.</p> <p>Improving a design plan based on peer evaluation.</p> <p>Testing and adapting a design to improve it as it is developed.</p>	<ul style="list-style-type: none"> 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 that has been brought into the country. To know what a food mile is. <p>Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.</p> <p>Establishing and using design criteria to help test and review dishes.</p> <p>Knowing how to prepare themselves and a workspace to cook safely in, learning the basic rules to avoid food contamination.</p> <p>Following the instructions within a recipe.</p> <p>Describing the benefits of seasonal fruits and vegetables and the impact on the environment.</p> <p>Suggesting points for improvement when making a seasonal tart.</p>	

<p>Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>Children should understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Children understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Children apply their understanding of computing to program, monitor and control their products</p> <p>Food and Nutrition Children understand and apply the principles of a healthy and varied diet</p> <p>Children prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p> <p>Children understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>		<ul style="list-style-type: none"> Evaluating the function and purpose of a final product based on: the motion and the accuracy of workmanship on performance. 	<ul style="list-style-type: none"> Testing bridges and identifying what makes a successful bridge structure. 	
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Upper Key Stage 2 Knowledge End Points (National Curriculum)	Year 6			
		Autumn Term	Spring Term	Summer Term
Key Stage One: National Curriculum End Points	Topic	Monitoring and Control – Programmable components	Food – Adapting a traditional recipe	Textiles – Upcycling/sustainability
<p>Design Children 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</p> <p>Children generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>Make Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>Children select from and use a wider range of materials and components, including construction materials, textiles</p>	<p>Key Knowledge</p>	<ul style="list-style-type: none"> To understand what variables are in programming. To know some of the features of a Micro:bit. To know that an algorithm is a set of instructions to be followed by the computer. To know that it is important to check my code for errors (bugs). To know that a simulator can be used as a way of checking that your code works before installing it onto an electronic device. 	<ul style="list-style-type: none"> To understand where meat comes from – learning that beef is from cattle and how beef is reared and processed, including key welfare issues. To know that I can adapt a recipe to make it healthier by substituting ingredients. Following a recipe, including using the correct quantities of each ingredient. Writing a recipe, explaining the key steps, method and 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 surface. 	<ul style="list-style-type: none"> To know the properties and uses of a range of fabrics. To investigate natural and synthetic factices and how their uses changed textile design and manufacture. To understand the importance of recycling and reusing fabric. To understand that it is important to design bespoke products with the client/target customer in mind. To know that using a template (or pattern) helps to accurately mark out a design on fabric To know how to use a range of sewing and joining techniques. To understand the importance of consistently sized stitches.

<p>and ingredients, according to their functional properties and aesthetic qualities</p> <p>Evaluate Children investigate and analyse a range of existing products</p> <p>Children evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Children understand how key events and individuals in design and technology have helped shape the world</p> <p>Technical knowledge Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>Children should understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Children understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Children apply their understanding of computing to program, monitor and control their products</p> <p>Food and Nutrition Children understand and apply the principles of a healthy and varied diet</p> <p>Children prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p> <p>Children understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>	<p>Key Skills</p>	<ul style="list-style-type: none"> • Writing design criteria for a programmed timer (Micro:bit). • Exploring different warning systems and using this research to inform design criteria. • Understanding what logos are and why they are important in the world of design and business. • Using and manipulating shapes and clipart and using computer-aided design (CAD) to produce a logo. • Following a list of design requirements. • Developing a prototype case for a warning system • Creating a 3D structure using a net. • Programming a Micro:bit to time a set number of seconds/minutes upon button press. • Documenting and evaluating the project. • Evaluating a Micro:bit program against points on design criteria and amending them to include any changes made. • Testing a program for bugs (errors in the code). • Finding and fixing the bugs (debug) in a code. 	<ul style="list-style-type: none"> • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Cutting and preparing recipes 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. • Working safely and hygienically with independence. • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. 	<ul style="list-style-type: none"> • Generating ideas through sketching and discussion. • Designing a product in accordance with a specification and design criteria to fit a specific theme. • Creating a range of annotated designs. • Including facts and drawings from research undertaken. • Modelling ideas through prototypes. • Understanding the purpose of products (toys), including what is meant by ‘fit for purpose’ and ‘form over function’. • Using a template when pinning panels onto fabric. • Marking and cutting fabric accurately, in accordance with a design. • Drawing a design from different perspectives. • Working to a given timescale. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a product – attaching objects using thread and adding a secure fastening. • Learning different decorative stitches. • Sewing accurately with even regularity of stitches. • Evaluating work continually as it is created. • Evaluate products against design specification and identify strengths and how weaknesses could be improved.
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