

KS2 DT Progression

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. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Structures: Y3, Y5


Cooking and nutrition: Y3, Y5, Y6

Electrical systems: Y4, Y6

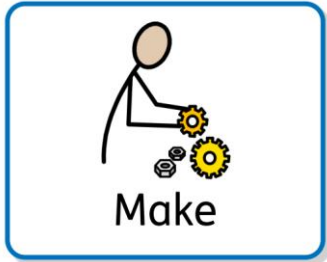
Digital world: Y4

Mechanisms: Y3, Y5

Textiles: Y4, Y6

<p>Golden Threads</p>	<p>Year 3 Structures: Making a castle Cooking and Nutrition: Eating seasonally and harvest time Mechanisms: Pneumatic Toys</p>	<p>Year 4 Electrical systems: Lanterns Digital world: Mindful moments timer Textiles: Book sleeve</p>	<p>Year 5 Structures: Bridges Mechanisms: Pop up books Cooking and Nutrition: Salsa</p>	<p>Year 6 Electrical Systems: Steady hand game Cooking and Nutrition: Italian meal Textiles: Christmas Stockings</p>
	<p>Making a castle</p> <ul style="list-style-type: none"> • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create 	<p>Lanterns</p> <ul style="list-style-type: none"> • Designing a lantern, giving consideration to the target audience • Create both design and success criteria focusing on features of individual design ideas. <p>Mindful moments timer</p>	<p>Bridges</p> <ul style="list-style-type: none"> • Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation. <p>Pop up books:</p>	<p>Steady hand game</p> <ul style="list-style-type: none"> • Designing a steady hand game - identifying and naming the components required. • Drawing a design from three different perspectives.

	<p>the features - materials needed and colours.</p> <ul style="list-style-type: none"> • Designing and/or decorating a castle tower on CAD software. <p>Pneumatic Toys</p> <ul style="list-style-type: none"> • 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 explain ideas clearly. <p>Eating seasonally</p> <ul style="list-style-type: none"> • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. 	<ul style="list-style-type: none"> • Writing design criteria for a programmed timer (Micro:bit). • Exploring different mindfulness strategies. • Applying the results of my research to further inform my design criteria. • Developing a prototype case for my mindful moment timer. • Using and manipulating shapes and clipart by using computer-aided design (CAD), to produce a logo. • Following a list of design requirements. <p>Book sleeve</p> <ul style="list-style-type: none"> • Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve. 	<ul style="list-style-type: none"> • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. <p>Salsa</p> <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. 	<ul style="list-style-type: none"> • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. • Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. <p>Italian Meal</p> <ul style="list-style-type: none"> • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. <p>Christmas Stockings</p> <ul style="list-style-type: none"> • Designing a stocking in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions.
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Making a castle

- Constructing a range of 3D geometric shapes using nets.
- Creating special features for individual designs.
- Making facades from a range of recycled materials.

Pneumatic Toys

- 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 and weaving.

Lanterns

- Making a lantern with a working electrical circuit and switch.
- Using appropriate equipment to cut and attach materials.
- Assembling a lantern according to the design and success criteria.

Mindful moments timer

- Developing a prototype case for my mindful moment timer.
- Creating a 3D structure using a net.
- Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press

Book Sleeve

- Making and testing a paper template with accuracy and in keeping with the design criteria.

Bridges

- Making a range of different shaped beam bridges.
- Using triangles to create truss bridges that span a given distance and support 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 a structure needs 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.

Steady hand game

- 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.

Italian Meal

- 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.

Christmas Stockings

- Using a template when cutting fabric to ensure they achieve the correct shape.

	<p>Eating seasonally</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric. • Working neatly by sewing small, straight stitches. • Incorporating a fastening to a design. 	<p>Pop up books:</p> <ul style="list-style-type: none"> • Following a design brief to make a pop up book, neatly and with focus on accuracy. • 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. <p>Salsa</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a stocking, attaching features (such as ribbon) using thread. • Finishing the stocking with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.
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Making a castle

- Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.
- Suggesting points for modification of the individual designs.

Pneumatic Toys

- Using the views of others to improve designs.
- Testing and modifying the outcome, suggesting improvements.
- Understanding the purpose of exploded-diagrams through the eyes of a designer and their client

Eating seasonally

- Establishing and using design criteria to help test and review dishes.
- Describing the benefits of seasonal fruits and

Lanterns

- Evaluating electrical products.
- Testing and evaluating the success of a final product.

Mindful moments timer

- Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages.
- Evaluating my Micro:bit program against points on my design criteria and amending them to include any changes I made.
- Documenting and evaluating my project.
- Understanding what a logo is and why they are important in the world of design and business.
- Testing my program for bugs (errors in the code).
- Finding and fixing the bugs (debug) in my code.

Book Sleeve

Bridges

- 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.

Pop up books:

- Evaluating the work of others and receiving feedback on own work.
- Suggesting points for improvement.

Salsa

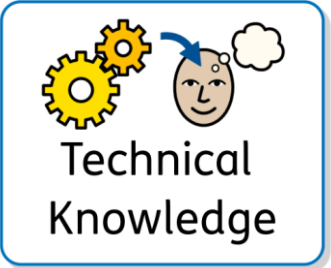
- Identifying the nutritional differences between different products and recipes.
- Identifying and describing healthy benefits of food groups.

Steady hand game

- 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.


Italian Meal

- 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 when scoring others’ dishes, and when evaluating their own throughout the planning, preparation and cooking process.
- Evaluating health and safety in production to

	<p>vegetables and the impact on the environment.</p> <ul style="list-style-type: none"> • Suggesting points for improvement when making a seasonal tart. 	<ul style="list-style-type: none"> • Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement. • Articulating the advantages and disadvantages of different fastening types 		<p>minimise cross contamination</p> <p>Christmas Stockings</p> <ul style="list-style-type: none"> • Reflecting on their work continually throughout the design, make and evaluate process.
 <p>Technical Knowledge</p>	<p>Making a castle</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 following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and 	<p>Lanterns</p> <ul style="list-style-type: none"> • To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity 	<p>Bridges</p> <ul style="list-style-type: none"> • To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is 	<p>Steady hand game</p> <ul style="list-style-type: none"> • 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. • To know that 'form' means the shape and appearance of an object. • To know the difference

	<p>gatehouse - and their purpose.</p> <ul style="list-style-type: none"> • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product. <p>Pneumatic Toys</p> <ul style="list-style-type: none"> • 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. 	<p>that can be used to power products.</p> <ul style="list-style-type: none"> • 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. <p>Mindful moments timer</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 your code works before 	<p>important based on properties.</p> <ul style="list-style-type: none"> • To understand the material (functional and aesthetic) properties of wood. • To understand the difference between arch, beam, truss and suspension bridges. • To understand how to carry and use a saw safely. <p>Pop up books:</p> <ul style="list-style-type: none"> • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing. 	<p>between 'form' and 'function'.</p> <ul style="list-style-type: none"> • To understand that 'fit for purpose' means that a product works how it should and is easy to use. <ul style="list-style-type: none"> • To know that form over purpose means that a product looks good but does not work very well. • To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. • To understand the diagram perspectives 'top view', 'side view' and 'back'. <p>Italian Meal</p> <ul style="list-style-type: none"> • 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.
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	<p>Eating seasonally</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 which has been brought into the country. • To know that exported food is food which has been sent to another country. • To understand that 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 	<p>installing it onto an electronic device.</p> <ul style="list-style-type: none"> • To understand the terms 'ergonomic' and 'aesthetic'. <p>Book Sleeve</p> <ul style="list-style-type: none"> • 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. 	<p>Salsa</p> <ul style="list-style-type: none"> • To understand where ingredients come from • 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 bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with unclean objects. 	<ul style="list-style-type: none"> • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is 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). <p>Christmas Stockings</p> <ul style="list-style-type: none"> • To understand that it is important to design clothing with the client/target customer in mind. <ul style="list-style-type: none"> • To know that using a template helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches
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	<p>vitamins, minerals and fibre.</p> <ul style="list-style-type: none"> • 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. 			
 <p>Vocabulary</p>	<p>Making a castle</p> <ul style="list-style-type: none"> • 2D • 3D • castle • design • key features • net • Scoring • shape • Stable • stiff • strong • structure 	<p>Lanterns</p> <ul style="list-style-type: none"> • Battery • bulb • buzzer • conductor • circuit • circuit diagram • Electricity • insulator • series circuit • switch • component • design 	<p>Bridges</p> <ul style="list-style-type: none"> • beam bridge • arch bridge • truss bridge • strength • technique • corrugation • lamination • stiffness • rigid • factors • Stability • visual appeal 	<p>Steady hand game</p> <ul style="list-style-type: none"> • assemble • Battery • battery pack • Benefit • bulb • bulb holder • buzzer • circuit • circuit symbol • component • conductor • copper

	<ul style="list-style-type: none"> • Tab <p>Pneumatic toys</p> <ul style="list-style-type: none"> • Mechanism • lever • pivot • linkage system • pneumatic system • input • output • Component • thumbnail sketch • research • adapt • properties • Reinforce • Motion <p>Eating seasonally</p> <ul style="list-style-type: none"> • Climate • diet • imported • ingredients • natural • processed • reared • recipe • seasonal • seasons • sugar 	<ul style="list-style-type: none"> • design criteria • diagram • evaluation • LED • model • Shape • Target • audience • Input • Recyclable • Theme • Aesthetics • assemble • equipment • ingredients • packaging • properties • sketch test <p>Fastenings</p> <ul style="list-style-type: none"> • Criteria • Fabric • Fastening • Fix • Mock-up • Stitch • Template <p>Mindful moments timer</p> <ul style="list-style-type: none"> • Ergonomic • Timer 	<ul style="list-style-type: none"> • aesthetics • joints • mark out • Hardwood • softwood • wood file/rasp • Sandpaper • Glasspaper • bench hook/vice • Tenon saw/coping saw • Assemble • Material properties • Reinforce • Wood sourcing • Evaluate • Quality of finish • Accuracy <p>Pop-up book</p> <ul style="list-style-type: none"> • design • input • motion • mechanism • criteria • research • Reinforce • Model <p>Salsa</p>	<ul style="list-style-type: none"> • design • design criteria • evaluation • fine motor skills • fit for purpose • form • function • gross motor skills • insulator • LED • User <p>Italian Meal</p> <ul style="list-style-type: none"> • equipment • Flavours • ingredients • method • research • recipe • bridge method • cookbook • cross-contamination • farm to fork • preparation • Storyboard <p>Stockings</p> <ul style="list-style-type: none"> • Annotate • Decorate • Design criteria
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		<ul style="list-style-type: none">• Program• Loop• Coding• Block• Variable• Pause• Bug• Instructions• Net• Template• Develop• Join• Assemble• Test• Form• Function• Prototype• Cheap• Clip art• Computer-aided design (CAD)• Mindfulness	<ul style="list-style-type: none">• processed• ethical• diet• ingredients• supermarket• farm• balanced	<ul style="list-style-type: none">• Fabric• Target customer• Stocking
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