



# Design and Technology Curriculum

Broughton Fields Primary School

# Intent

At Broughton Fields, our intention, through DT teaching - is to provide children with a real-life context for learning. Our design & technology curriculum is constructed to inspire children to think innovatively and inquisitively. We provide varied learning opportunities which aim to develop not only children's technical skill in design & technology; but also to develop their wider knowledge of product design and their ability to apply vocabulary accurately.

The children are taught to combine their designing and making skills with knowledge and understanding in order to design and make a product. Skills are taught progressively to ensure that all children are able to learn and practice in order to develop as they move through the school. Evaluation is an integral part of the design process and allows children to adapt and improve their product, providing them with not only a sense of achievement but a strong foundation for the next step of their learning and a key skill for life. Our Design and Technology curriculum requires children to draw on skills within Mathematics, Art, Science and Computing. Children will deepen their understanding and independence within all of these subject areas during their Design and Technology lessons.

Design & technology prepares children to deal with tomorrow's rapidly changing world. It encourages children to become independent, creative problem-solvers and think as individuals and as part of a team – making positive changes to their quality of life. It enables them to identify needs and opportunities and to respond to them by developing a range of ideas and by making products and systems. Through the study of design & technology, children combine practical skills with an understanding of aesthetic, social and environmental issues, as well as functions and industrial practices. This allows them to reflect on and evaluate present and past design & technology assessing its use and impact on the world. Design & technology helps all children to become astute and informed future consumers and potential innovators.



***“Design & technology prepares children to deal with tomorrow's rapidly changing world. It encourages children to become independent, creative problem-solvers and think as individuals and as part of a team”***







# Leader: Lauren Leadbeater

Documents showing progression, knowledge and skills are shown below.



Broughton Fields Primary School – Design and Technology Progression

		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	Design	Talking about what they plan to make before starting.	Learning the importance of a clear design criteria. Including individual preferences and requirements in a design.	Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects.	Designing a <b>castle</b> with key features to appeal to a specific person/purpose.  Drawing and labelling a <b>castle</b> design using 2D shapes, labelling: the 3D shapes that will create the features - materials need and colours	Designing a stable <b>pavilion</b> structure that is aesthetically pleasing and selecting materials to create a desired effect. Building frame structures designed to support weight.	Designing a stable structure that is able to support weight Creating frame structure with focus on triangulation	Designing a <b>playground</b> featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs
	Make	Use items from small world e.g. blocks, Lego, K-Nex to create structures such as towers.	Making stable structures from card, tape and glue Following instructions to cut and assemble the supporting structure of a <b>windmill Making functioning turbines and axles</b> which are assembled into a main supporting structure	Making a structure according to design criteria. Creating joints and structures from paper/card and tape.	Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. Making facades from a range of recycled materials	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	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 a structure needs reinforcement and using card corners for support.	Building a range of <b>play apparatus structures</b> 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

	Evaluate	With support, to be able to talk about ways that the structure can be improved.	Evaluating a <b>windmill</b> according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.	Exploring the features of structures Comparing the stability of different shapes Testing the strength of own structures Identifying the weakest part of a structure Evaluating the strength, stiffness and stability of own structure	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	Evaluating structures made by the class Describing what characteristics of a design and construction made it the most effective Considering effective and ineffective designs	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	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
	Technical Knowledge	Talking about why they have used specific items for specific purposes e.g. using longer bricks to add height, laying bricks horizontally for stability.	Describing the purpose of structures, including windmills. Learning how to turn 2D nets into 3D structures. Learning that the shape of materials can be changed to improve the strength and stiffness of structures Understanding that cylinders are a strong type of structure that are often used for windmills and lighthouses Understanding that windmill turbines use wind to turn and make the machines inside work Understanding that axles are used in structures and mechanisms to make parts turn in a circle Developing awareness of different structures for different purposes	<ul style="list-style-type: none"> <li>Identifying natural and man-made structures</li> <li>Identifying when a structure is more or less stable than another</li> <li>Knowing that shapes and structures with wide, flat bases or legs are the most stable</li> <li>Understanding that the shape of a structure affects its strength</li> <li>Using the vocabulary: strength, stiffness and stability</li> <li>Knowing that materials can be manipulated to improve strength and stiffness</li> <li>Building a strong and stiff structure by folding paper</li> </ul>	Identifying features of a castle • Identifying suitable materials to be selected and used for a castle, considering weight, compression, tension • Extending the knowledge of wide and flat based objects are more stable • Understanding the terminology of strut, tie, span, beam • Understanding the difference between frame and shell structure	Learning what pavilions are and their purpose • Building on prior knowledge of net structures and broadening knowledge of frame structures • Learning that architects consider light, shadow and patterns when designing • Implementing frame and shell structure knowledge • Considering effective and ineffective designs	Exploring how to create a strong beam • Identifying arch and beam bridges and understanding the terms: compression and tension • Identifying stronger and weaker structures • Finding different ways to reinforce structures • Understanding how triangles can be used to reinforce bridges • Articulating the difference between beam, arch, truss and suspension bridges	Knowing that structures can be strengthened by manipulating materials and shapes • Identifying the shell structure in everyday life (cars, aeroplanes, tins, cans) • Understanding man made and natural structures

Mechanisms	Design		<p>Explaining how to adapt mechanisms, using bridges or guides to control the movement • Designing a moving story book for a given audience • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement</p>	<p>Generating and communicating ideas using sketching and modelling • Learning about different types of structures, found in the natural world and in everyday objects</p>	<p>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 the features - materials need and colours</p>	<p>Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect • Building frame structures designed to support weight</p>	<p>Designing a stable structure that is able to support weight • Creating frame structure with focus on triangulation</p>	<p>Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs</p>
	Make	<p>Use wheeled construction materials e.g. Lego to create simple vehicles and consider how they move by varying the sizes of the wheels. Use junk modelling items to create models with simple mechanisms e.g. a straw with cotton reels as wheels and axels for a vehicle.</p>	<p>Following a design to create moving models that use levers and sliders • Adapting mechanisms</p>	<p>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 • Selecting materials according to their characteristics • Following a design brief</p>	<p>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</p>	<p>Measuring, marking, cutting and assembling with increasing accuracy • Making a model based on a chosen design</p>	<p>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>	<p>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</p>

	Evaluate	Test the items made and consider ways they could be improved.	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 • Testing mechanisms, identifying what stops wheels from turning, knowing • that a wheel needs an axle in order to move	Evaluating own designs against design criteria • Using peer feedback to modify a final design • Evaluating different designs • Testing and adapting a design	Using the views of others to improve designs • Testing and modifying the outcome, suggesting improvements	Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance	Evaluating the work of others and receiving feedback on own work • Suggesting points for improvement	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
	Technical Knowledge	With support, know that, in order for parts of a model to move, the components have to be joined in a particular way. Know that different sized wheels can be used for different outcomes.	Learning that levers and sliders are mechanisms and can make things move • Identifying whether a mechanism • is a lever or slider and determining what movement the mechanism will make • Using the vocabulary: up, down, left, right, vertical and horizontal to describe movement • Identifying what mechanism makes a toy or vehicle roll forwards • Learning that for a wheel to move it must be attached to an axle	Learning that mechanisms are a collection of moving parts that work together in a machine • Learning that there is an input and output in a mechanism • Identifying mechanisms in everyday objects • Learning that a lever is something that turns on a pivot • Learning that a linkage is a system of levers that are connected by pivots • Exploring wheel mechanisms • Learning how axels help wheels to move a vehicle	Understanding how pneumatic systems work • Learning that mechanisms are a system of parts that work together to create motion • Understanding that pneumatic systems can be used as part of a mechanism • Learning that pneumatic systems force air over a distance to create movement	Learning that products change and evolve over time • Learning that all moving things have kinetic energy • Understanding that kinetic energy is the energy that something (object person) has by being in motion	Knowing that an input is the motion used to start a mechanism • Knowing that output is the motion that happens as a result of starting the input • Knowing that mechanisms control movement • Describing mechanisms that can be used to change one kind of motion into another	Using a bench hook to saw safely and effectively • Exploring cams, learning that different shaped cams produce different follower movements • Exploring types of motions and direction of a motion
Cooking and Nutrition	Design	Consider what decorations can be used to create the desired effect and how they should be applied e.g. raisins for buttons on a gingerbread man.	Designing smoothie carton packaging by-hand or on ICT software	• Designing a healthy wrap based on a food combination which work well together •	Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish •	Designing a biscuit within a given budget, drawing upon previous taste testing	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	Writing a recipe, explaining the key steps, method and ingredients • Including facts and drawings from research undertaken



						ingredients • Designing appealing packaging to reflect a recipe	
Make	Measure, with support, ingredients to make simple biscuits and cakes. Where appropriate, add decorations.	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 •	Slicing food safely using the bridge or claw grip • Constructing a wrap that meets a design brief	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	Following a baking recipe • Cooking safely, following basic hygiene rules • Adapting a recipe	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 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
Evaluate	Compare items made by different pupils and say what they like and what could be improved.	Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be included on packaging	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	Establishing and using design criteria to help 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	Evaluating a recipe, considering: taste, smell, texture and appearance • Describing the impact of the budget on the selection of ingredients • Evaluating and comparing a range of products • Suggesting modifications •	Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups	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
Technical Knowledge	Understand that ingredients have to be mixed to make the dough or mixture and that this will change after baking. Understand that ingredients have to be carefully weighed to ensure appropriate quantities are used for success.	Understanding the difference between fruits and vegetables • Describing and grouping fruits by texture and taste	Understanding what makes a balanced diet • Knowing where to find the nutritional information on packaging • Knowing the five food groups	Learning that climate affects food growth • Working with cooking equipment safely and hygienically • Learning that imported foods travel from far away and this can negatively impact the environment • Learning that vegetables and fruit grow in certain seasons • Learning that each fruit and vegetable gives us nutritional benefits • Learning to use, store and clean a knife safely	Understanding the impact of the cost and importance of budgeting while planning ingredients for biscuits • Understanding the environmental impact on future product and cost of production	Understanding where food comes from - learning that beef is from cattle and how beef is reared and processed • Understanding what constitutes a balanced diet • Learning to adapt a recipe to make it healthier • Comparing two adapted recipes using a nutritional calculator and then identifying the healthier option •	Learning how to research a recipe by ingredient • Recording the relevant ingredients and equipment needed for a recipe • Understanding the combinations of food that will complement one another • Understanding where food comes from, describing the process of 'Farm to Fork' for a given ingredient



Textiles	Design		Using a template to create a design for a puppet	Designing a pouch	Designing and making a template from an existing cushion and applying individual design criteria	Writing design criteria for a product, articulating decisions made • Designing a personalised Book sleeve	Designing a stuffed toy considering the main component shapes required and creating an appropriate template • Considering the proportions of individual components	Designing a waistcoat in accordance to specification linked to set of design criteria to fit a specific theme • Annotating designs
	Make		Cutting fabric neatly with scissors • Using joining methods to decorate a puppet • Sequencing steps for construction •	Selecting and cutting fabrics for sewing • Decorating a pouch using fabric glue or running stitch •	Following design criteria to create a cushion • Selecting and cutting fabrics with ease using fabric scissors • Sewing cross stitch to join fabric • Decorating fabric using appliqué • Completing design ideas with stuffing and sewing the edges •	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	Creating a 3D stuffed toy from a 2D design • Measuring, marking and cutting fabric accurately and independently • Creating strong and secure blanket stitches when joining fabric • Using applique to attach pieces of fabric decoration	Using a template when pinning panels onto fabric • Marking and cutting fabric accurately, in accordance with a design • Sewing a strong running stitch, making small, neat stitches and following the edge • Tying strong knots • Decorating a waistcoat -attaching objects using thread and adding a secure fastening
	Evaluate		Reflecting on a finished product, explaining likes and dislikes •	Troubleshooting scenarios posed by teacher • Evaluating the quality of the stitching on others' work • 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	Evaluating an end product and thinking of other ways in which to create similar items	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	Testing and evaluating an end product and giving point for further improvements	Evaluating work continually as it is created
	Technical Knowledge		Learning different ways in which to join fabrics together: pinning, stapling, gluing	Joining items using fabric glue or stitching • Identifying benefits of these techniques • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric	Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch and appliqué • Understanding the need to count the thread on a piece of evenweave fabric in each direction to create	Understanding that there are different types of fastenings and what they are • Articulating the benefits and disadvantages of different fastening types	Learning to sew blanket stitch to join fabric • Applying blanket stitch so the space between the stitches are even and regular • Threading needles independently •	Learning different decorative stitches • Application and outcome of the individual technique • Sewing accurately with even regularity of stitches Progression in Design and Technology Neatly pinning and cutting fabric using a

				Neatly pinning and cutting fabric using a template	uniform size and appearance • Understanding that fabrics can be layered for affect			template count the thread on a piece of even weave fabric in each direction to create uniform size and appearance • Understanding that fabrics can be layered for affect
	Design				Designing a game that works using static electricity, including the instructions for playing the game Identifying a design criteria and a target audience	Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas	Designing an electronic greetings card with a simple electrical control circuit Creating a labelled design showing positive and negative parts in relation to the LED and the battery	Designing a steady hand game - identifying and naming the components required Drawing a design from three different perspectives Generating ideas through sketching and discussion Modelling ideas through prototypes
	Make				Making an electrostatic game, referring to the design criteria Using a wider range of materials and equipment safely Using electrostatic energy to move objects in isolation as well as in part of a system	Making a torch with a working electrical circuit and switch Using appropriate equipment to cut and attach materials Assembling a torch according to the design and success criteria	Making a working circuit Creating an electronics greeting card, referring to a design criteria Mapping out where different components of the circuit will go	Making electromagnetic motors and tweaking the motor to improve its function Constructing a stable base for an electromagnetic 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
	Evaluate				Learning to give constructive criticism on own work and the work of others Testing the success of a product against the original design criteria and justifying opinions	Evaluating electrical products Testing and evaluating the success of a final product and taking inspiration from the work of peers	Evaluating a completed product against the original design sheet and looking at modifications that could be made to improve the reliability or aesthetics of it or to incorporate another type of electronic device, eg: buzzer	Testing own and others finished games, identifying what went well and making suggestions for improvement

	Technical Knowledge				<p>Understanding what static electricity is and how it moves objects through attraction or repulsion</p> <p>Generating static electricity independently</p> <p>Using static electricity to make objects move in a desired way</p> <p>Learning how electrical items work</p> <p>Identifying electrical products</p>	<p>Learning what electrical conductors and insulators are</p> <p>Understanding that a battery contains stored electricity and can be used to power products</p> <p>Identifying the features of a torch</p> <p>Understanding how a torch works</p> <p>Articulating the positives and negatives about different torches</p>	<p>Learning the key components used to create a functioning circuit</p> <p>Learning that graphite is a conductor and can be used as part of a circuit</p> <p>Learning the difference between series and parallel circuits</p> <p>Understanding that breaks in a circuit will stop it from working</p>	<p>Understanding how electromagnetic motors work</p> <p>Learning that batteries contain acid, which can be dangerous if they leak</p> <p>Learning that when electricity enters a magnetic field it can make a motor</p>
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	Knowledge	Skills	
<b>Year 1 Autumn</b>			
Structures	To know why a clear design is important. To understand what makes a purposeful design. To know which tools to use to complete a task. To know what characteristics and components of materials are. To evaluate against a design criteria. To know how to strengthen a freestanding structure.	Design	Communicate ideas through drawing, labelling and verbalising.
		Make	Make stable structures from card, tape and glue. Follow instructions to cut and assemble a supporting structure.
		Evaluate	Evaluating a final product according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't.
		Technical Knowledge	To know that freestanding structures can be made stronger, stiffer and more stable.
<b>Year 1 Spring</b>			
Cooking and Nutrition	Understand that all food comes from plants or animals. Understand that food has to be farmed, grown elsewhere (e.g. home) or caught. Identify fruits and vegetables and begin to understand the difference between them. Know where and how fruits and vegetables grow. Understand and use the basic principles of a healthy diet to prepare dishes including how fruit and vegetables are part of the eatwell plate. To identify the fruits they like and dislike through taste, texture and appearance To identify some common fruits. Know whether food is healthy or not How to prepare simple dishes safely and hygienically, without using a heat source. How to use techniques such as cutting, peeling and grating.	Design	Understand what is necessary of the dish Learn the importance of a clear design criteria including individual preferences and requirements in a design. Communicate ideas through drawing, labelling and verbalising/through sketching and modelling
		Make	Chop fruit and vegetables safely. Identify if a food is a fruit or a vegetable. Learn where and how fruits and vegetables grow. Follow procedures for safety and hygiene.-hair tied back, sleeves rolled back, hands washed and cuts are covered with a waterproof dressing
		Evaluate	Taste and evaluate different food combinations. Describe appearance, smell and taste. Suggest information to be included on packaging. Evaluate own designs against design criteria. Use peer feedback to modify a final design. Evaluate different designs. Discuss as a class, the success of their work against the success criteria. Identify aspects of their peers' work that they particularly like and why.
		Technical Knowledge	Know whether food is healthy or not How to prepare simple dishes safely and hygienically, without using a heat source. How to use techniques such as cutting, peeling and grating.
<b>Year 1 Summer</b>			
Sewing	To know the importance of a clear design criteria including individual preferences and requirements in a design. To know that puppets can be made from a range of materials To know how to use scissors safely To know how to create and follow a design To know the importance of evaluating a finished product and suggesting improvements.	Design	Use a template with support
		Make	Use simple joining methods to join fabric With support use simple running stitch
		Evaluate	Reflect on a finished product, explaining likes and dislikes. Suggest points for improvements.
		Technical Knowledge	Recognise the difference between stiches, selecting the correct approach
<b>Year 2 Autumn</b>			
Mechanisms – making fire engines	Design purposeful, functional, appealing products for themselves and other users based on design criteria	Design	Design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. Creating clearly labelled drawings which illustrate movement Select a suitable linkage system to produce the desired motions.

	<p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p> <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> <p>Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria</p> <p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> <p>Know about the simple working characteristics of materials and components.</p> <p>Understand the movement of simple mechanisms such as levers, sliders, wheels and axles</p>	Make	Follow a design to create moving models that use levers and sliders. Make linkages using card for levers and split pins for pivots. Experiment with linkages adjusting the widths, lengths and thicknesses of card used.
		Evaluate	Test mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move. Evaluate own designs against design criteria. Use peer feedback to modify a final design. Evaluate different designs. Test and adapt a design. Review the success of a product by testing it with its intended audience. Discuss as a class, the success of their work against the success criteria. Identify aspects of their peers' work that they particularly like and why.
		Technical Knowledge	Know about the simple working characteristics of materials and components. Understand the movement of simple mechanisms such as levers, sliders, wheels and axles.
<b>Year 2 Spring</b>			
Sewing - puppets	<p>Cut and assemble components with more accuracy. Selecting materials according to their characteristics</p> <p>To know that puppets can be made from a range of materials</p> <p>To know how to sew</p> <p>To know how to create and use a template</p> <p>To know how to use scissors safely</p> <p>To know how to create and follow a design</p> <p>To know how to evaluate their work</p> <p>Understand that a 3-D textiles product can be assembled from two identical fabric shapes</p>	Design	Design and create a template for a textile project e.g.puppets Selecting appropriate materials based on their properties
		Make	Select and cut fabrics for sewing. Sew using running stitch.
		Evaluate	Evaluate own designs against design criteria. Use peer feedback to modify a final design. Evaluate different designs. Test and adapt a design. Review the success of a product by testing it with its intended audience. Discuss as a class, the success of their work against the success criteria. Identify aspects of their peers' work that they particularly like and why.
		Technical Knowledge	Understand that a 3-D textiles product can be assembled from two identical fabric shapes.
<b>Year 2 Summer</b>			
Cooking and Nutrition – making smoothies	<p>Understand that all food comes from plants or animals.</p> <p>Understand that food has to be farmed, grown elsewhere (e.g. home) or caught.</p> <p>How to name and sort foods into the five groups in The eat well plate.</p> <p>Know that everyone should eat at least five portions of fruit and vegetables every day.</p> <p>Know how to prepare simple dishes safely and hygienically, without using a heat source.</p> <p>Know how to use techniques such as: cutting, peeling and grating.</p>	Design	Learn the importance of a clear design criteria including individual preferences and requirements in a design. Communicate ideas through drawing, labelling and verbalising/through sketching and modelling Generate designs using food combinations which work well together
		Make	Create final outcomes which meet a design brief. Slice food safely.
		Evaluate	Describe the taste, texture and smell of fruit and vegetables. Taste testing food combinations and final products. Describe the information that should be included on a label.

		Technical Knowledge	Know how to prepare simple dishes safely and hygienically, without using a heat source. Know how to use techniques such as: cutting, peeling and grating.
<b>Year 3 Autumn</b>			
Structures – making houses	To know how to research and generate design ideas. Develop design criteria from a design brief. Identify a design criteria and a target audience Identify features of a specified structure e.g. castle. Identify suitable materials to be selected and used for a specified structure, considering weight, compression, tension. Extend the knowledge that wide and flat based objects are more stable. Understand the terminology of strut, tie, span, beam. Understand the difference between frame and shell structure.	Design	Design a structure with key features to appeal to a specific person/purpose. Generate designs with building frame structures designed to support weight.
		Make	Construct a range of 3D geometric shapes using nets. Make facades from a range of recycled materials. Create a range of different shaped frame structures. Make a variety of free standing frame structures of different shapes and sizes. Select appropriate materials to build a strong structure and for the cladding. Reinforce corners to strengthen a structure. Learn to create different textural effects with materials.
		Evaluate	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. Learn to give constructive criticism on own work and the work of others. Test the success of a product against the original design criteria and justifying opinions.
		Technical Knowledge	Identify features of a specified structure e.g. castle. Identify suitable materials to be selected and used for a specified structure, considering weight, compression, tension. Extend the knowledge that wide and flat based objects are more stable. Understand the terminology of strut, tie, span, beam. Understand the difference between frame and shell structure.
<b>Year 3 Spring</b>			
Cooking and Nutrition	To know how to create a success criteria based on design concepts To understand the importance of selecting appropriate materials To know how to evaluate against design criteria. Learn that climate affects food growth. Work with cooking equipment safely and hygienically. Learn that imported foods travel from far away and this can negatively impact the environment. Learn that vegetables and fruit grow in certain seasons. Learn that each fruit and vegetable gives us varying nutritional benefits. Learn to use, store and clean a knife safely.	Design	Design a healthy and nutritious recipe using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.
		Make	Know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. Follow the instructions within a recipe.
		Evaluate	As a group, create a design criteria to help test and review dishes. Describe the benefits of seasonal fruits and vegetables and the impact on the environment.
		Technical Knowledge	Learn that climate affects food growth. Work with cooking equipment safely and hygienically. Learn that imported foods travel from far away and this can negatively impact the environment. Learn that vegetables and fruit grow in certain seasons. Learn that each fruit and vegetable gives us varying nutritional benefits. Learn to use, store and clean a knife safely.
<b>Year 3 summer</b>			



Electrical Systems	Learn that different types of drawings are used in design to explain ideas clearly. To understand which electrical components to choose. To have an understanding of electrical components and what they do. Understand what static electricity is and how it moves objects through attraction or repulsion. Generate static electricity independently. Use static electricity to make objects move in a desired way. Understand that a battery contains stored electricity and can be used to power products.	Design	Create success criteria focusing on features of individual design ideas.
		Make	Make an electrical product e.g. torch with a working electrical circuit and switch.
		Evaluate	Understand how key events and individuals in design and technology have helped shape the world.
		Technical Knowledge	Understand what static electricity is and how it moves objects through attraction or repulsion. Generate static electricity independently. Use static electricity to make objects move in a desired way. Understand that a battery contains stored electricity and can be used to power products.
Year 4 Autumn			
Textiles – making a headdress.	To know how to create exploded diagrams in order to design. To understand the importance of accuracy when designing and making. To recognise different stitch types. To understand the point of fastenings and how they work. Understand that there are different types of fastenings and what they are. Articulate the benefits and disadvantages of different fastening types	Design	Measure, mark, cut and assemble with increasing accuracy. Create products according to design and success criteria
		Make	Make and test a paper template with accuracy and in keeping with the design criteria. Measure, mark and cut fabric using a paper template. Select a stitch style to join fabric, working neatly sewing small neat stitches. Incorporate a fastening to a design.
		Evaluate	Describe what characteristics of a design and construction made it the most effective. Consider what makes an effective and ineffective design. Decide how many of the criteria should be met for the product to be considered successful. Evaluate and compare a range of final products (their own and peers) suggesting modifications Test and evaluate the success of a final product, taking inspiration from the work of peers.
		Technical Knowledge	Understand that there are different types of fastenings and what they are. Articulate the benefits and disadvantages of different fastening types.
Year 4 Spring			
Mechanisms	To understand the purpose of planning using nets To know what air resistance is and how this impacts design choices. To know what a pneumatic system is and how these work Understand that kinetic energy is the energy that something (object person) has by being in motion.	Design	Drawing a net to create a structure from. Choose shapes that increase or decrease speed as a result of air resistance.
		Make	Create a pneumatic system to create a desired motion. Build secure housing for a pneumatic system. Use syringes and balloons to create different types of pneumatic systems
		Evaluate	Describe what characteristics of a design and construction made it the most effective. Consider what makes an effective and ineffective design. Decide how many of the criteria should be met for the product to be considered successful. Evaluate and compare a range of final products (their own and peers) suggesting modifications

			Test and evaluate the success of a final product, taking inspiration from the work of peers.
		Technical Knowledge	Learn that all moving things have kinetic energy.
<b>Year 4 Summer</b>			
Electrical Systems	To understand the importance of designing to a set criteria. Identify electrical products Learn what electrical conductors and insulators are Understand how electrical products work Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors Learn how electrical items work Identify the features of electrical products. Articulate the positives and negatives about different electrical products	Design	Write design criteria for a product, articulating decisions made.
		Make	Create products according to design and success criteria
		Evaluate	Describe what characteristics of a design and construction made it the most effective. Consider what makes an effective and ineffective design. Decide how many of the criteria should be met for the product to be considered successful. Evaluate and compare a range of final products (their own and peers) suggesting modifications Test and evaluate the success of a final product, taking inspiration from the work of peers.
		Technical Knowledge	Learn how electrical items work Identify the features of electrical products. Articulate the positives and negatives about different electrical products.
<b>Year 5 Autumn</b>			
Textiles	To understand the role designing has on a finished product. To know how to independently mark and measure. To know a variety of stitches from previous learning and be able to apply these. To know blanket stitching Learn to sew blanket stitch to join fabric. Apply blanket stitch so the space between the stitches are even and regular	Design	Create a textile design considering the main component shapes required and create an appropriate template. Consider proportions of individual components
		Make	Create a 3D textile outcome from a 2D design. Measure, mark and cut fabric accurately and independently. Create strong and secure blanket stitches when joining fabric. Use applique to attach pieces of fabric decoration.
		Evaluate	Suggest points for improvements for own work and those designed by others. Test and evaluate an end product and giving point for further improvements. Evaluate a completed product against the original design sheet and look at modifications that could be made to improve the reliability or aesthetics
		Technical Knowledge	Learn to sew blanket stitch to join fabric. Apply blanket stitch so the space between the stitches are even and regular.
<b>Year 5 Spring</b>			
Structures	Explore how to create a strong beam. Identify arch and beam bridges and understanding the terms: compression and tension -Identify stronger and weaker structures. Find different ways to reinforce structures. Understand how triangles can be used to reinforce bridges.	Design	Design a stable structure that is able to support weight. Create a frame structure with focus on triangulation
		Make	Making a range of different shaped beam bridges. Using triangles to create truss bridges that span a given distance and supports a load. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saws safely.

	Articulating the difference between beam, arch, truss and suspension bridges		Identifying where a structure needs reinforcement and using card corners for support.
		Evaluate	Adapt and improve structure by identifying points of weakness and reinforcing them as necessary
		Technical Knowledge	Explore how to create a strong beam. Identify arch and beam bridges and understanding the terms: compression and tension -Identify stronger and weaker structures. Find different ways to reinforce structures. Understand how triangles can be used to reinforce bridges. Articulating the difference between beam, arch, truss and suspension bridges
Year 5 Summer			
Cooking and Nutrition	Understand where food comes from - learning that beef is from cattle and how beef is reared and processed. Understand what constitutes a balanced diet. Learn to adapt a recipe to make it healthier. Compare two adapted recipes using a nutritional calculator and then identifying the healthier option.	Design	Adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. Write an amended method for a recipe to incorporate the relevant changes to ingredients. Designing appealing packaging to reflect a recipe.
		Make	Cut and prepare vegetables safely. Know how to avoid cross-contamination. Follow a step by step method carefully to make a recipe, including using the correct quantities of each ingredient. Work to a given timescale. Working safely and hygienically with independence
		Evaluate	Evaluating a recipe, considering: taste, smell, texture and origin of the food group. Taste testing and scoring final products
		Technical Knowledge	Understand where food comes from - learning that beef is from cattle and how beef is reared and processed. -Understand what constitutes a balanced diet. -Learn to adapt a recipe to make it healthier. -Compare two adapted recipes using a nutritional calculator and then identifying the healthier option.
Year 6 Autumn			
Mechanisms	To know what a cam is and how this applies in design To know how to select appropriate tools to make, mark and measure. Use a bench hook to saw safely and effectively. Explore cams, learning that different shaped cams produce different follower movements. Explore types of motions and direction of a motion.	Design	After experimenting with a range of cams, creating a design based on a choice of cam to create a desired movement. Designs show an understanding on how linkages change the direction of a force. Generate designs which make things move at the same time.
		Make	Measure, mark and cut components accurately using a ruler and scissors. Assemble 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. Select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set
		Evaluate	Improve a design plan based on peer evaluation. -Test and adapt a design to improve it as it is developed. -Identify what makes a successful outcome.



			<p>- Evaluating work continually as it is created.</p> <p>-Test own and others finished projects, identifying what went well and making suggestions for improvement.</p>
		Technical Knowledge	<p>Use a bench hook to saw safely and effectively.</p> <p>Explore cams, learning that different shaped cams produce different follower movements.</p> <p>Explore types of motions and direction of a motion.</p>
<b>Year 6 Spring</b>			
Cooking and Nutrition	<p>Record the relevant ingredients and equipment needed for a recipe.</p> <p>Understand the combinations of food that will complement one another.</p> <p>Understand where food comes from, describing the process of 'Farm to Fork' for a given ingredient</p>	Design	<p>Writing a recipe, explaining the key steps, method and ingredients</p> <p>Including facts and drawings from research undertaken.</p>
		Make	<p>Follow a recipe including using the correct quantities of each ingredient.</p> <p>Work to a given timescale.</p> <p>Working safely and hygienically with independence.</p>
		Evaluate	<p>Suggest and write up points of improvements in productions.</p> <p>Evaluate health and safety in production to minimise cross contamination.</p>
		Technical Knowledge	<p>Record the relevant ingredients and equipment needed for a recipe.</p> <p>Understand the combinations of food that will complement one another.</p> <p>Understand where food comes from, describing the process of 'Farm to Fork' for a given ingredient</p>
<b>Year 6 Summer</b>			
Electrical systems	<p>Understand how electromagnetic motors work.</p> <p>Learn that batteries contain acid, which can be dangerous if they leak.</p> <p>Learn that when electricity enters a magnetic field it can make a motor</p>	Design	<p>Designing a steady hand game – identifying and naming the components required.</p> <p>Drawing a design from three different perspectives.</p> <p>Generate ideas through sketching and discussion.</p> <p>Model ideas through prototypes.</p>
		Make	<p>Make electromagnetic motors and tweak the motor to improve its function.</p> <p>Construct a stable base for an electromagnetic game.</p> <p>Incorporate a circuit into a base.</p>
		Evaluate	<p>Improve a design plan based on peer evaluation.</p> <p>Test and adapt a design to improve it as it is developed.</p> <p>Identify what makes a successful outcome.</p> <p>Evaluating work continually as it is created.</p> <p>Test own and others finished projects, identifying what went well and making suggestions for improvement.</p>
		Technical Knowledge	<p>Understand how electromagnetic motors work.</p> <p>Learn that batteries contain acid, which can be dangerous if they leak.</p> <p>Learn that when electricity enters a magnetic field it can make a motor</p>