Design and Technology Long Term Plan
St Dennis Primary Academy
"Design is not just what it looks like and feels like. Design is how it works." – Steve Jobs

<table>
<tr><th></th><th>Autumn 1</th><th>Autumn 2</th><th>Spring 1</th><th>Spring 2</th><th>Summer 1</th><th>Summer 2</th></tr>
<tr><td rowspan="2">EYFS</td><td colspan="6">Expressive Arts and Design

• Children are provided with a range of materials for children to construct with e.g. construction toys such as Lego, K-Nex, building blocks, pipes with joints and wheels etc are available in continuous provision. Other materials including lolly sticks, fabric, glues, tape, different fasteners, natural materials are available to create.
• Children are encouraged to think about and discuss what they want to make and problems and how they might be solved as they arise. e.g. planning sheets are available for children to draw their ideas and adults further ideas by asking questions e.g. how will you make that? How will you join the materials? Is there another way to connect?
• Adults reflect with children on how they have achieved their aims. e.g. Model shelf to display creations to give opportunities for children to share their opinions and then improve at a later time / date.
• Children are taught different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. e.g. Area in setting with materials and a display board with models that show different ways to connect and join.
• A range of materials and tools are provided to teach children how to use them with care and precision. e.g. Work bench with real tools etc which children are shown how to use safely. A range of tools are used with Playdoh.
• Independence is promoted, taking care not to introduce too many new things at once. e.g. Resources are selected and shared for a progression of skills. For example, in continuous provision, resources are selected to develop fine motor skills required to use tools safely and effectively.

ELG: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

ELG: Share their creations, explaining the process they have used.

Opportunities for developing designing, making and evaluating skills are within continuous provision and additional opportunities are planned for to pre-teach concepts and vocabulary for Year 1 through specific units on structures, food, mechanisms and textiles.</td></tr>
<tr><td></td><td></td><td></td><td>Area: Structures
Making animal homes</td><td>Area: Cooking and Nutrition
Salad / fruit salad</td><td>Area: Structures
Making boats</td><td>Area: Textiles
Create flags that celebrate where we live</td></tr>
<tr><td>Year 1</td><td>Area: Structures
Unit: Constructing a windmill
Composite: Design and construct a windmill</td><td>Area: Textiles
Unit: Puppets
Composite: Designing, making and decorating a hand puppet</td><td>Area: Mechanisms
Unit: Making a moving picture
Composite: Design, make and evaluate a moving picture</td><td>Area: Mechanisms
Unit: Wheels and axles
Composite: Design, make and evaluate a moving vehicle</td><td>Area: Cooking and Nutrition
Unit: Smoothies
Composite: Making a fruit and vegetable smoothie</td><td></td></tr>
</table>

Year 2	**Area**: Cooking and Nutrition **Unit**: A balanced diet **Composite**: Design and make a healthy wrap	**Area**: Structures **Unit**: Baby Bear's chair **Composite**: Design and make the King's throne	**Area**: Mechanisms **Unit**: Fairground wheel **Composite**: Design and make a ferris wheel	**Area**: Textiles **Unit**: Pouches **Composite**: Design and make a fish	**Area**: Mechanisms **Unit**: Making a moving monster **Composite**: Design and make a moving alien	
Year 3	**Area**: Cooking and Nutrition **Unit**: Eating seasonally **Composite**: Bake a seasonal tart		**Area**: Structures **Unit**: Constructing a castle **Composite**: Identify and explain why the key features of a castle are important	**Area**: Mechanical systems **Unit**: Pneumatic toys **Composite**: Design and make a pneumatic flower including thumbnail sketches and exploded diagrams	**Area**: Digital world **Unit**: Wearable technology **Composite**: A wearable device that lights up	**Area**: Textiles **Unit**: Cushions **Composite**: To apply two new sewing techniques to create a flag
Year 4	**Area**: Textiles **Unit**: Fastenings **Composite**: Design and make a fabric book sleeve	**Area**: Cooking and Nutrition **Unit**: Adapting a recipe **Composite**: Create a recipe for a biscuit	**Area**: Structures **Unit**: Pavilions **Composite**: Design and make a structure to house a dragon		**Area**: Mechanical systems **Unit**: Making a mechanical car **Composite**: Design and make a car with a working mechanical system	**Area**: Electrical systems **Unit**: Torches **Composite**: Create a working torch with a switch
Year 5		**Area**: Textiles **Unit**: Stuffed Toys **Composite**: Design a stuffed Christmas decoration making decisions on materials	**Area**: Cooking and Nutrition **Unit**: Developing a recipe **Composite**: Children research and modify a traditional Cornish pasty	**Area**: Mechanical systems **Unit**: Pop-up books **Composite**: Create a functional four-page pop-up storybook design	**Area**: Digital World **Unit**: Monitoring Devices **Composite**: Understanding how to program a Micro: bit animal monitoring device	**Area**: Structures **Unit**: Bridges **Composite**: Testing and making a wooden truss bridge
Year 6	**Area**: Electrical systems **Unit**: Steady hand game **Composite**: Make and test a circuit incorporating it into the base of their game	**Area**: Textiles **Unit**: Waistcoats **Composite**: Cut, pin, sew and decorate an apron	**Area**: Mechanical systems **Unit**: Automata **Composite**: Produce an automata frame linked to biomes			**Area**: Cooking and Nutrition **Unit**: Come Dine with me **Composite**: Design and then prepare a 3-course meal **Area**: Structures **Unit**: Playgrounds **Composite**: Design and create a model of a new playground featuring five apparatus, made from three different structures

Cooking and Nutrition	Mechanisms / Mechanical Systems	Structures	Textiles	Electrical Systems (Year 4 and 6)	Digital World (Year 3 and 5)
Key Stage 1					

Key Stage 1 and 2

Year 1					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
Topic Question	What would you use to build a house?	How have toys changed through time?	How do we keep people safe at sea?	How has transport changed over time?	How does your garden grow?
DT Unit	Constructing a windmill	Puppets	Making a moving picture	Wheels and axles	Smoothies
Area	Structures	Textiles	Mechanisms	Mechanisms	Cooking and nutrition
Builds On	Reception – Spring 1 Making animal homes	Reception – Summer 2 Create flags that celebrate where we live	Reception – Summer 1 Making vehicles	Reception – Summer 1 Making vehicles	Reception – Spring 2 fruit salad
Memory Master	Discussion about structures they have created and how they made them strong.	Discussion about what textiles are.	Revisit vocabulary from previous units this year- what can we remember from pictures clues	What vocabulary do we know about parts of a vehicle? Create a class labelled picture.	What fruits and vegetables do we already know? Where do they grow?
Future Learning	Year 2 – Spring 1 Baby Bear's Chair	Year 2 – Spring 2 Pouches	Year 1 – Summer 1 Wheels and axles	Year 2 – Autumn 2 Fairground Wheel	Year 2 - Autumn 1 A balanced diet
Enrichment				Visit from Squashbox theatre – linked back to puppet unit	
Vocabulary	client, design, design criteria, evaluation, net, stable, strong, structure, test, weak, windmill, windmill axle, windmill structure, windmill turbine	decorate, design, fabric, glue, model, hand puppet, safety pin, stencil, technique, template	assemble, design, design criteria, evaluation, mechanism, model, sliders, stencil, target audience, template, test	accurate, axle, axle holder, chassis, design, fix, mechanic, mechanism, model, test, wheel	cut, fruit, ingredients, juice, juicer, leaf, root, seed, stem, table knife, vegetable
Composite	Design and construct a windmill	Designing, making and decorating a hand puppet	Design, make and evaluate a moving picture	Design, make and evaluate a moving vehicle	Making a fruit and vegetable smoothie
Designer / Technologist	James Blyth (wind turbine pioneer)	Craig Johnson (Squashbox Theatre)	Moving picture books. Discuss how publishers make them.	Mattel – makers of hot wheels cars The Mattel Creations Story | Mattel Creations	Kenwood
Lesson Sequence	**Research –** I can explain what a windmill does. **Skills –** I can make a stable structure. I can puncture a hole. I can cut carefully. I can fold to make the shape of a structure.	**Research –** I can research puppets from the past and now. **Skills –** I can use equipment safely to pin, staple and glue fabric together. **Design –** I can use a template to design my puppet.	**Research –** I can research moving picture books. **Skills –** I can make a slider mechanism. **Design –** I can design a moving picture.	**Research –** I can research how wheels move **Skills –** I can identify why a wheel won't turn **Design –** I can design a moving vehicle **Make –** I can make a moving vehicle	**Research –** I can identify fruits and vegetables and where they grow **Skills -** I can use appropriate equipment to cut and juice **Design –** I can design a smoothie **Make –** I can make a smoothie

	Design – I can design a windmill and label its components. **Make –** I can join parts of a structure to make a windmill. **Evaluate –** I can evaluate my structure.	**Make –** I can make my puppet by following my design. **Evaluate –** I can evaluate my puppet by saying what I like and dislike about it.	**Make –** I can make a moving picture that uses a sliding mechanism. **Evaluate –** I can evaluate my moving picture by testing it.	**Evaluate –** I can evaluate a moving vehicle by racing it	**Evaluate –** I can evaluate a smoothie by taste testing and thinking about how to market my smoothie.
Critical skills	**Design** • Learning the importance of a clear design criteria • Including individual preferences and requirements in a design **Make** • Making stable structures from card, tape and glue • Learning how to turn 2D nets into 3D structures • Following instructions to cut and assemble the supporting structure of a windmill • Making functioning turbines and axles which are assembled into a main supporting structure	**Design** • Using a template to create a design for a puppet **Make** • Cutting fabric neatly with scissors • Using joining methods to decorate a puppet • Sequencing steps for construction **Evaluate** • Reflecting on a finished product, explaining likes and dislikes	**Design** • Explaining how to adapt mechanisms, using bridges or guides to control the movement • Designing a moving story book for a given audience **Make** • Following a design to create moving models that use levers and sliders **Evaluate** • 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	**Design** • Designing a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move • Creating clearly labelled drawings which illustrate movement **Make** • Adapting mechanisms **Evaluate** • Testing mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle in order to move	**Design** • Designing smoothie carton packaging by-hand or on ICT software **Make** • Chopping fruit and vegetables safely to make a smoothie • Identifying if a food is a fruit or a vegetable • Learning where and how fruits and vegetables grow **Evaluate** • Tasting and evaluating different food combinations • Describing appearance, smell and taste • Suggesting information to be included on packaging
Critical knowledge	**Technical** • To understand that the shape of materials can be changed to improve the strength and stiffness of structures • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses) • To understand that axles are used in structures and	**Technical** • To know that 'joining technique' means connecting two pieces of material together • To know that there are various temporary methods of joining fabric by using staples. glue or pins • To understand that different techniques for joining materials can be used for different purposes	**Technical** • 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 slide, slots, guides and an object • To know that bridges and	**Technical** • To know that wheels need to be round to rotate and move • To understand that for a wheel to move it must be attached to a rotating axle • To know that an axle moves within an axle holder which is fixed to the vehicle or toy • To know that the frame of a vehicle (chassis) needs to be	**Cooking and Nutrition** • Understanding the difference between fruits and vegetables • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber) • To know that a blender is a machine which mixes ingredients together into a smooth liquid • To know that a fruit has seeds and a vegetable does not

	mechanisms to make parts turn in a circle • To begin to understand that different structures are used for different purposes • To know that a structure is something that has been made and put together **Additional** • To know that a client is the person I am designing for • To know that design criteria is a list of points to ensure the product meets the clients needs and wants • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity • To know that windmill turbines use wind to turn and make the machines inside work • To know that a windmill is a structure with sails that are moved by the wind • To know the three main parts of a windmill are the turbine, axle and structure	• To understand that a template (or fabric pattern) is used to cut out the same shape multiple times • To know that drawing a design idea is useful to see how an idea will look	guides are bits of card that purposefully restrict the movement of the slider **Additional** • To know that in design and technology we call a plan a 'design'	balanced **Additional** • To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles	• 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)

Year 2					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**
Topic Question	What do I need to be healthy?	Who were the great monarchs?	How was the Great Fire of London great?	Who would live in a habitat like this?	Who were the first explorers of space?
DT Unit	A balanced diet	Baby Bear's chair	Fairground wheel	Pouches	Making a moving monster
Area	Food	Structures	Mechanisms	Textiles	Mechanisms
Builds On	Year 1 – Summer 1 Smoothies	Year 1 – Autumn 1 Constructing a windmill	Year 1 – Summer 1 Wheel and axles	Year 1 – Autumn 2 Puppets	Year 1 – Spring 1 Moving storybook
Memory Master	Kapow Quiz on Smoothies Unit	Kapow Quiz on Constructing a Windmill Unit	Kapow Quiz on Wheels and Axles Unit	Kapow Quiz on Puppets Unit	Kapow Quiz Moving storybook
Future Learning	Year 3 – Autumn 1 Eating seasonally	Year 3 – Spring 2 Constructing a castle	Year 2 – Summer 2 Making a moving monster	Year 3 – Summer 1 Cushions	Year 3 – Autumn 2 Pneumatic toys
Enrichment	Visit from Aspens – healthy eating			Squashbox theatre visit – puppet making workshop	
Vocabulary	alternative, diet, balanced diet, evaluation, expensive, healthy, ingredients, nutrients, packaging, refrigerator, sugar	function, man-made, mould, natural, stable, stiff, strong, structure, test, weak	axle, axle holder, decorate, evaluation, mechanism, stable, strong, test, waterproof, weak, wheel	accurate, fabric, knot, pouch, running stitch, sew, shape, stencil, template, thimble	design criteria, evaluation, input, linkage, mechanical, mechanism, output, pivot, survey
Composite	Design and make a healthy wrap	Design and make the King's throne	Design and make a ferris wheel	Design and make a fish	Design and make a moving alien
Designer / Technologist	Aspens (School catering company)	A.W.N Pugin (Sovereign Throne Designer) and compare to modern companies	London Eye	Jellycat	Robert Hinchcliff (inventor of scissors)
Lesson Sequence	**Research –** I can recognise foods and their food groups. I can identify the balance of food groups in a meal. **Skills –** I can use appropriate equipment to cut, grate and spread. I can select a balanced combination of ingredients. **Design –** I can design a healthy wrap, naming the ingredients. **Make –** I can use the appropriate food preparation techniques to make a healthy wrap.	**Research –** I can research man-made and natural structures I can research thrones from around the world **Skills –** I can use explore how to make a stable structure I can strengthen materials I can join materials **Design -** I can design a throne **Make -** I can make a model throne that is stable	**Research –** I can research how Ferris wheels are made. I can research how mechanisms work **Skills –** I can choose appropriate materials I can make a wheel on an axle that turns effectively I can make safe holes **Design –** I can design a Ferris wheel **Make –** I can make a Ferris wheel that turns	**Research –** I can research how stuffed toys are made **Skills –** I can use a running stitch I can use a template I can cut fabric **Design –** I can design a toy fish **Make –** I can make a toy fish using running stitch to join pieces. **Evaluate –** I can evaluate my toy by watching others play with it	**Research –** I can research every day uses for levers and linkages **Skills –** I can make linkages to create different movements. **Design –** I can design an alien that will move **Make –** I can make a moving alien using a linkage **Evaluate –** I can evaluate my alien based on whether it moves how I wanted it to.

	Evaluate – I can evaluate my wrap, based on a taste test.	**Evaluate** – I can evaluate the success of my throne by testing its strength.	**Evaluate** – I can evaluate the success of my Ferris wheel by testing how easily it turns		
Critical skills	**Design** • Designing a healthy wrap based on a food combination which work well together **Make** • Slicing food safely using the bridge or claw grip • Constructing a wrap that meets a design brief **Evaluate** • 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	**Design** • Generating and communicating ideas using sketching and modelling • Learning about different types of structures, found in the natural world and in everyday objects **Make** • 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 **Evaluate** • 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	**Design** • Selecting a suitable linkage system to produce the desired motions • Designing a Ferris wheel selecting appropriate materials based on their properties **Make** • Selecting materials according to their characteristics • Following a design brief **Evaluate** • Evaluating different designs • Testing and adapting a design	**Design** • Designing a fish **Make** • Selecting and cutting fabrics for sewing • Decorating a pouch using fabric glue or running stitch • Threading a needle • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric • Neatly pinning and cutting fabric using a template **Evaluate** • 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	**Design** • Creating a class design criteria for a moving alien • Designing a moving alien for a specific audience in accordance with a design criteria **Make•** Making linkages using card for levers and split pins for pivots • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used • Cutting and assembling components neatly **Evaluate** • Evaluating own designs against design criteria • Using peer feedback to modify a final design
Critical knowledge	**Cooking and Nutrition** • 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	**Technical** • To know that shapes and structures with wide, flat bases or legs are the most stable • To understand that the shape of a structure affects its strength • To know that materials can be manipulated to improve strength and stiffness	**Technical** • Evaluating different designs • Testing and adapting a design **Additional** • Evaluating different designs • Testing and adapting a design	**Technical** • 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	**Technical** • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement • To know that there is always an input and output in a mechanism • To know that an input is the energy that is used to start

	• 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 food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'	• 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 **Additional** • To know that natural structures are those found in nature • To know that man-made structures are those made by people		used to protect my fingers when sewing	something working • To know that an output is the movement that happens as a result of the input • To know that a lever is something that turns on a pivot • To know that a linkage mechanism is made up of a series of levers **Additional** • To know some real-life objects that contain mechanisms

Year 3					
	Autumn 1	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topic Question	What do I need to make my body move?	What is King Henry VIII remembered for?	How did Britain change during prehistory?	What is there to discover in North America?	What are the key geographical features of the United Kingdom?
DT Unit	Eating seasonally	Constructing a castle	Pneumatic toys	Wearable technology	Flags
Area	Cooking and nutrition	Structures	Mechanical systems	Digital world	Textiles
Builds On	Year 2 - Autumn 1 A balanced diet	Year 2 – Autumn 2 Baby Bear's Chair	Year 2 – Spring 1 Fairground Wheel	N/A	Year 2 – Spring 2 Pouches
Memory Master	Kapow Quiz on A Balanced Diet Unit	Kapow Quiz on Baby Bear's Chair Unit	Kapow Quiz on Fairground Wheel Unit	Kapow Quiz on Pneumatic Toys Unit (Digital World – new learning)	Kapow Quiz on Pouches Unit
Future Learning	Year 4 – Autumn 1 Eating Seasonally	Year 4 – Spring 1 Pavilions	Year 4 – Summer 1 Making a slingshot car	Year 5 – Summer 1 Monitoring devices	Year 4 – Autumn 2 Fastenings
Enrichment	Cook with a chef	Visit to Pendennis Castle			
Vocabulary	climate, dry climate, exported, imported, mediterranean, nationality, nutrients, polar climate, recipe, seasonal food, seasons, temperate climate, tropical climate	2d, 3d, castle, design criteria, evaluation, facade, feature, flag, net, recyclable, scoring, stable, strong, structure, tab, weak	exploded- diagram, function, input, linkages, mechanism, motion, net, output, pivot, pneumatic systems, thumbnails sketch	Analyse, annotate, concept, control, evaluate, function, initiate, program, simulator, user	accurate, applique, cross-stitch, cushion, decorate, detail, fabric, patch, running-stitch, seam, stencil, stuffing, target audience
Composite	Bake a seasonal tart	Identify and explain why the key features of a castle are important.	Design and make a pneumatic flower including thumbnail sketches and exploded diagrams	Design, develop a program, house and promote a Micro:bit wearable device that lights up	To apply two new sewing techniques to create and design a flag
Designer / Technologist	Nadiya Hussain (UK based baker)	Sir Christopher Wren (architect of Hampton court palace)	John Dunlop	Smart watches – research how many companies make them.	Flying colours flagmakers
Lesson Sequence	**Research –** I can explain why food comes from different places around the world. I can explain the benefits of seasonal food.	**Research –** I can identify different features of castles. **Skill –** I can construct 3D nets. **Design –** I can design a castle using some key features that meet a design brief.	**Research –** I can research how pneumatic systems create movement **Skill –** I can create draw different types of diagrams **Design –** I can design a pneumatic toy	**Research –** I can research and evaluate current products **Skill –** I can use code to program and control a product **Design –** I can develop design criteria.	**Research –** I can research how flags are made. **Skill –** I can use applique to add detail. I can use a running stitch to join two pieces of fabric.

	Skill – I can use the appropriate equipment to peel and cut safely. I can describe the flavours of a variety of foods. **Design –** I can design a seasonal tart, naming the ingredients and nutritional information. **Make -** I can use the appropriate food preparation techniques to make a seasonal tart **Evaluate –** I can evaluate my tart, based on a taste test and considering its appearance. I can provide feedback on somebody else's tart.	**Make –** I can make a castle using some 3D nets and packaging **Evaluate –** I can evaluate my castle against the design brief, considering its stability.	**Make –** I can make a toy using a pneumatic system **Evaluate –** I can evaluate my toy by considering its effectiveness in creating movement.	I can design a light up wearable technology product **Make –** I can make a point of sale display to market my product. **Evaluate –** I can evaluate my product by improving my design based on feedback.	**Design –** I can design a decorative flag. **Make –** I can make a decorative flag, following my design. **Evaluate –** I can evaluate my product based on its appearance.
Critical skills	**Design** • Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish **Make** • Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination • Following the instructions within a recipe **Evaluate** • 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	**Design** • 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 needed and colours **Make** • Constructing a range of 3D geometric shapes using nets • Creating special features for individual designs • Making facades from a range of recycled materials **Evaluate** • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design	**Design** • Designing a flower 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 **Make** • Creating a pneumatic system to create a desired motion • Building secure housing for a pneumatic system • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy	**Design** • Problem solving by suggesting which features on a Micro:bit might be useful and justifying my ideas. • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. • Developing design ideas through annotated sketches to create a product concept. • Developing design criteria to respond to a design brief **Make** • Following a list of design requirements. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. **Evaluate**	**Design** • Designing and making a template from an existing cushion and applying individual design criteria **Make** • Following design criteria to create a cushion • Selecting and cutting fabrics with ease using fabric scissors • Threading needles with greater independence • Tying knots with greater independence • Sewing cross stitch to join fabric • Decorating fabric using appliqué • Completing design ideas with stuffing and sewing the edges **Evaluate** • Evaluating an end product and thinking of other ways in which to create similar items

	seasonal tart	• Suggesting points for modification of the individual designs	• Selecting materials due to their functional and aesthetic characteristics • Manipulating materials to create different effects by cutting, creasing, folding, weaving **Evaluate** • 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	• Analysing and evaluating wearable technology. • Using feedback from peers to improve design.	
Critical knowledge	**Cooking and Nutrition** • 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 vitamins, minerals and fibre	**Technical** • To understand that wide and flat based objects are more stable • To understand the importance of strength and stiffness in structures **Additional** • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse – and their purpose • 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	**Technical** • 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 **Additional** • To understand how sketches, drawings and diagrams can be used to communicate design ideas • To know that exploded-diagrams are used to show how different parts of a product fit together • To know that thumbnail sketches are small drawings to get ideas down on paper quickly	**Technical** • To understand that, in programming, a 'loop' is code that repeats something again and again until stopped. • To know that a Micro:bit is a pocket-sized, codeable computer. • To know that a simulator is able to replicate the functions of an existing piece of technology **Additional** •To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'. • To know what a focus group is by taking part in one.	**Technical** •To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric •To know that when two edges of fabric have been joined together it is called a seam •To know that it is important to leave space on the fabric for the seam •To understand that some products are turned inside out after sewing so the stitching is hidden

	• To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health • To know safety rules for using, storing and cleaning a knife safely • To know that similar coloured fruits and vegetables often have similar nutritional benefits				

Year 4					
	Autumn 1	Autumn 2	Spring 1	Summer 1	Summer 2
Topic Question	Were the Dark Ages dark?	Where does my food go?	Are dragons real?	How does the Amazon Rainforest matter to us?	What makes St Dennis, St Dennis?
DT Unit	Fastenings	Adapting a recipe	Pavilions	Making a mechanical car	Torches
Area	Textiles	Cooking and nutrition	Structures	Mechanical systems	Electrical systems
Builds On	Year 3 – Summer 1 Flags	Year 3 – Autumn 1 Eating seasonally	Year 3 – Spring 1 Constructing a castle	Year 3 – Autumn 2 Pneumatic toys	N/A
Memory Master	Kapow Quiz on Fastenings Unit	Kapow Quiz on Eating Seasonally Unit	Kapow Quiz on Constructing a Castle Unit	Kapow Quiz on Pneumatic Toys Unit	Linked to science stunning start, explore electrical components and name these
Future Learning	Year 5 – Autumn 2 Stuffed toys	Year 5 – Spring 2 What could be healthier?	Year 5 – Summer 2 Structures	Year 5 – Spring 2 Pop-up books	Year 6 – Autumn 1 Steady hand game
Enrichment		Visit Clay's Kitchen			
Vocabulary	aesthetic, assemble, book sleeve, design criteria, evaluation, fabric, fastening, prototype, net, running-stitch, stencil, target audience, target customer, template	adapt, budget, building hire, equipment, evaluation, flavour, ingredients, method, net, packaging, prototype, quantity, recipe, target audience, unit of measurement, utilities	aesthetic, cladding, design criteria, evaluation, frame structure, function, inspiration, pavilion, reinforce, stable, structure, target audience, target customer, texture, theme	Bearing, chassis, force, machine, mechanism, prototype, target audience	battery, bulb, buzzer, cell, conductor, copper, design criteria, electrical item, electricity, electronic item, insulator, series circuit, switch, test, torch, wire
Composite	Design and make a fabric book sleeve	Create a recipe for biscuit	Design and make a structure to house a dragon	Design and make a car with a working mechanical system.	Create a working torch with a switch
Designer / Technologist	Karen Turner (UK textile artist)	Furniss Foods	B and Q (specifically look at pergolas). Compare to other more innovative pavilions.	Airfix	Benjamin Franklin
Lesson Sequence	**Research –** I can explore the main types of fastenings. I can explain the benefits and disadvantages of each fastening. **Skill –** I can thread a needle. I can sew using a neat running stitch.	**Research –** I can research how biscuits are mass produced. **Skill –** I can prepare ingredients by measuring and sifting. I can roll out dough to an even thickness. I can use cutters to create identical shapes.	**Research –** I can research different frame structures. **Skill –** I can make a range of different shaped frame structures. **Design –** I can design a pavilion to meet a design brief. **Make –** I can make a frame structure and add cladding.	**Research –** I can research the key design improvements in the history of the automobile. I can research how different mechanical systems can power a car **Skill –** I can make prototype chassis for different mechanical systems.	**Research –** I can research electrical products **Skill –** I can create a working circuit to light up a bulb **Design –** I can design a torch to meet a set of specific set needs **Make –** I can make a torch with a working circuit

	I can attach a fastening by sewing. **Design** – I can design a book sleeve that includes a fastening. **Make** – I can make a paper template. I can assemble the book sleeve and join it by sewing. **Evaluate** – I can evaluate my book sleeve by considering if it is fit for purpose.	**Design** – I can design a biscuit and its packaging. **Make** – I can make a biscuit by following a recipe. **Evaluate** – I can evaluate the final product using specific criteria.	**Evaluate** – I can evaluate my structure based on stability and strength.	**Design** – I can design a mechanical toy car kit **Make** – I can make a mechanical toy car kit **Evaluate** – I can evaluate a mechanical toy car kit by following the instructions to make it.	**Evaluate** – I can evaluate my torch based on whether it meets the user needs.
Critical skills	**Design** • Writing design criteria for a product, articulating decisions made • Designing a personalised book sleeve **Make** • Making and testing a paper template with accuracy and in keeping with the design criteria • Measuring, marking and cutting fabric using a paper template • Selecting a stitch style to join fabric, working neatly sewing small neat stitches • Incorporating fastening to a design **Evaluate** • 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	**Design** • Designing a biscuit within a given budget, drawing upon previous taste testing **Make** • Following a baking recipe • Cooking safely, following basic hygiene rules • Adapting a recipe **Evaluate** • 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	**Design** • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect • Building frame structures designed to support weight **Make** • Creating a range of different shaped frame structures • Making a variety of free standing frame structures of different shapes and sizes • Selecting appropriate materials to build a strong structure and for the cladding • Reinforcing corners to strengthen a structure • Creating a design in accordance with a plan • Learning to create different textural effects with materials **Evaluate** • Evaluating structures made by the class • Describing what characteristics of a design and construction	**Design** •Taking part in structured brainstorming sessions. • Developing drawing and sketching skills with a focus on clarity and simplicity. • Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (eg. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams) • Creating prototypes using materials with similar properties to their final design. • Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. • Developing designs by adding detail and justifications about materials, tools, methods. **Make** • Following detailed safety instructions. • Using a ruler as a measuring tool with increasing accuracy by creating spaced marks using millimetres and measuring lengths of objects. • Handle different sizes and types of scissors with confidence. • With close supervision using a hot glue gun to join wooden materials (e.g. lolly sticks). • Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage. • Selecting materials, components or ingredients from a wider choice but	**Design** • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas **Make** • 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 **Evaluate** • Evaluating electrical products • Testing and evaluating the success of a final product

	• Articulating the advantages and disadvantages of different fastening types		made it the most effective • Considering effective and ineffective designs	within a limited design space (e.g. seasonal ingredients from May and June in the UK). **Evaluate** • Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. • Reflecting on feedback to decide if and how it could be used to improve future iterations. • Investigating and analysing a range of existing products by looking at their functionality and appeal. • Analysing why specific products, designers or inventors are successful. • Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements. • Evaluating how effective their chosen materials and tools were in fulfilling the design brief.	
Critical knowledge	**Technical** • 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	**Cooking and nutrition** • To know that the amount of an ingredient in a recipe is known as the 'quantity' • To know that it is important to use oven gloves when removing hot food from an oven • To know the following cooking techniques: sieving, creaming, rubbing method, cooling •To understand the importance of budgeting while planning ingredients for biscuits	**Technical** • To understand what a frame structure is • To know that a 'free-standing' structure is one which can stand on its own **Additional** • To know that a pavilions is a decorative building or structure for leisure activities • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks • To know that a product's function means its purpose • To understand that the target audience means the person or group of people a	**Technical** • To understand that a mechanical system can allow us to move something more easily. • To know that mechanical systems have more than one mechanism that moves to make them work. • To know that mechanical systems are often hidden in products to make them look more appealing. **Additional** • To know that extra information on drawings or diagrams can help the user understand a design or idea. • To know that an exploded diagram shows how the parts of a product fit together. • To know that a prototype is a detailed model that helps a user understand how a product will work. • To know that a target audience is a group of people that might like the idea. • To know that different tools and equipment have different dangers. • To know that a ruler can be used to	**Technical** • 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 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 **Additional** • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens

			product is designed for • To know that architects consider light, shadow and patterns when designing	measure length. • To know that a hot glue gun can be used to join materials. • To know that better suggestions of improvements mean better feedback. • To know that they can choose to use feedback or not. • To know that some products are more successful than other because of their function. • To know that choices of materials and equipment can affect the final product. • To know that feedback is ideas and suggestions from other people that can help improve their work.	• To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison

Year 5					
	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic Question	What is life like in different climate zones?	What impact did the Industrial Revolution have on Cornish tin mining?	When and why did the Maya disappear?	Where can we see the influence of Ancient Greece today?	How do rivers impact the lives of people around the world?
DT Unit	Stuffed Toys	Developing a recipe	Pop-up books	Monitoring Devices	Bridges
Area	Textiles	Cooking and nutrition	Mechanical systems	Digital World	Structures
Builds On	Year 4 – Autumn 1 Fastenings	Year 4 – Autumn 2 Adapting a recipe	Year 4 – Summer 1 Mechanical Systems	Year 3 – Wearable technology	Year 4 – Spring 1 Pavilions
Memory Master	Kapow Quiz on Fastenings Unit	Kapow Quiz on Adapting a Recipe Unit	Kapow Quiz on Mechanical Systems Unit	Kapow Quiz on Electronics Unit	Kapow Quiz on Pavilions Unit
Future Learning	Year 6 – Autumn 2 Waistcoats	Year 6 – Summer 1 Come dine with me	Year 6 – Spring 1 Automata	Key Stage 3	Year 6 - Playgrounds
Enrichment		Pasty making with Cornish Pasty Company		Greek food tasting with Aspens	
Vocabulary	accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew,	adaptation, cook, cross-contamination, farm, hygiene,	aesthetic, cad, caption, design, design brief, design criteria, exploded-diagram, function,	boolean, device, durable, monitoring device, sensor,	accurate, arch bridge, beam bridge, bench hook, compression, coping saw, file, mark out,

	shape, stuffed toy, stuffing, template	ingredients, label, nutrient, nutritional value, process	input, linkage, mechanism, motion, output, pivots, prototype, sliders, structures, template	synthetic, variable, versatile, water-resistant, workplane (cad)	reinforce, sandpaper, set square or try square, shape, structure, suspension bridge, tenon saw, tension, truss bridge
Composite	Design a stuffed Christmas decoration making decisions on materials	Children research and modify a traditional Cornish pasty	Create a functional four-page pop-up storybook design	Understanding how to program a Micro: bit animal monitoring device	Testing and making a wooden truss bridge
Designer / Technologist	Liberty	Cornish pasty company	Lothar Meggendorfer (and link to Meggendorfer prize now) Award-Winning Pop-Ups: Guide to the Meggendorfer Prize Winners | Beautiful Books	Daniel Gabrial Fahrenheit Anders Celcius	Designers of Truss bridges (focus on adaptations of each) Ithiel Town William Howe Squire Whipple Thomas and Caleb Pratt
Lesson Sequence	**Research –** I can research traditional and modern sewn Christmas decorations. I can research a well-established company that specialises in fabric. **Skill –** I can thread a needle I can join fabric with blanket stitch I can use applique to add details **Design –** I can design a stuffed Christmas decoration **Make –** I can make a stuffed Christmas decoration based on my design. **Evaluate –** I can evaluate final products, suggesting improvements.	**Research –** I can understand how ingredients are reared and processed. I can consider the nutritional content of food. **Skill –** I can cut resistant foods safely and accurately. I can explain how to avoid cross contamination when preparing ingredients. **Design –** I can adapt a Cornish pasty recipe. I can design a paper bag packing for my pasty. **Make –** I can make a Cornish pasty by following a recipe **Evaluate –** I can evaluate my product based on taste and appearance.	**Research –** I can explore different types of pop-up mechanisms is books. **Skill –** I can make pivots, sliders and folds **Design –** I can design a pop-up book **Make –** I can make a pop-up book that meets the design brief. **Evaluate –** I can evaluate my book by sharing it with younger pupils.	**Research –** I can research monitoring devices **Skill –** I can write code to program a device I can use a CAD program I can join plastic bricks to create a desired design **Design –** I can create design criteria I can design plastic housing for the monitoring device **Make –** I can program and house a monitoring device **Evaluate –** I can evaluate the success of my monitoring device by testing how accurately it works.	**Research –** I can research the different types of bridge **Skill –** I can reinforce a structure to improve its strength **Design –** I can design a truss bridge **Make –** I can make a truss bridge **Evaluate –** I can evaluate my truss bridge based on its strength and stability

Critical skills	**Design** • Designing a stuffed Christmas decoration considering the main component shapes required and creating an appropriate template • Considering the proportions of individual components **Make** • 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 • Threading needles independently • Using applique to attach pieces of fabric decoration • Sewing blanket stitch to join fabric • Applying blanket stitch so the space between the stitches are even and regular **Evaluate** • Testing and evaluating an end product and giving point for further improvements	**Design** • 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 Researching existing recipes to inform ingredient choices **Make** • Cutting and preparing vegetables safely • Using equipment safely, including knives, hot pans and hobs • Knowing how to avoid cross-contamination • Following a step by step method carefully to make a recipe **Evaluate** • Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups	**Design** • 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 **Make** • 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 **Evaluate** • Evaluating the work of others and receiving feedback on own work • Suggesting points for improvement	**Design** • Researching (books, internet) for a particular (user's) animal's needs • Developing design criteria based on research • Generating multiple housing ideas using building bricks • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling • Placing and manoeuvring 3D objects, using CAD • Changing the properties of, or combine one or more 3D objects, using CAD **Make** • Understanding the functional and aesthetic properties of plastics • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range **Evaluate** • Stating an event or fact from the last 100 years of plastic history • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices • Explaining key functions in my program (audible alert, visuals) • Explaining how my product would be useful for an animal carer including programmed features	**Design** • Designing a stable structure that is able to support weight • Creating 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 • 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 **Evaluate** • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary • Suggesting points for improvements for own bridges and those designed by others

Critical knowledge	**Technical** • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric • To understand that it is easier to finish simpler designs to a high standard • To know that soft toys are often made by creating appendages separately and then attaching them to the main body • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely	**Cooking and Nutrition** • 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 • To know that I can use a nutritional calculator to see how healthy a food option is • To understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects • To know that nutritional information is found on food packaging. • To know that food packaging serves many purposes.	**Technical** • To know that mechanisms control movement • To understand that mechanisms that 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 **Additional** • To know that a design brief is a description of what I am going to design and make • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing	**Technical** • To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record • To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose • To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met **Additional** • To understand key developments in thermometer history • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future • To know the 6Rs of sustainability • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling	**Technical** • 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 important based on their properties • To understand the material (functional and aesthetic) properties of wood **Additional** • To understand the difference between arch, beam, truss and suspension bridges • To understand how to carry and use a saw safely

Year 6					
	Autumn 1	Autumn 2	Spring 1	Summer 2	Summer 2
Topic Question	Why is the Earth so angry?	How was the Battle of Britain a turning point in WWII?	Do we agree with Darwin's theory of evolution?	Why is the fishing industry so important to local communities?	Why is the fishing industry so important to local communities?
DT Unit	Steady hand game	Waistcoats	Automata	Come Dine with me	Playgrounds
Area	Electrical systems	Textiles	Mechanical systems	Food	Structures
Builds On	Year 4 – Summer 2 Electronic Charm	Year 5 – Autumn 1 Stuffed Toys	Year 5 – Spring 2 Pop-up books	Year 5 – Spring 1 Developing a recipe	Yea 5 – Summer 2 Bridges
Memory Master	Kapow Quiz on Electronic Charm Unit	Kapow Quiz on Stuffed Toys Unit	Kapow Quiz on Pop-up Books Unit	Kapow Quiz on What could be healthier Unit	Kapow Quiz on Bridges Unit
Future Learning	**Key Stage 3** **Design** • use research and exploration, such as the study of different cultures, to identify and understand user needs • identify and solve their own design problems and understand how to reformulate problems given to them • develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations • use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools **Make** • select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties **Evaluate** • understand and apply the principles of nutrition and health • cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet • become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] • understand the source, seasonality and characteristics of a broad range of ingredients **Cooking and nutrition** • understand and apply the principles of nutrition and health • cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet • become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] • understand the source, seasonality and characteristics of a broad range of ingredients				
Enrichment				Visit from a chef	Visit St Dennis park to explore the playground

Vocabulary	backboard, battery, buzzer, circuit, conductor, copper, function, insulator, led, magnetic field, net, pliers, prototype, series circuit, side view drawing, switch, side view drawing, test top view drawing	adapt, annotate, detail, fabric, fastening, knot, properties, running-stitch, seam, sew, shape, target audience, target customer, template, thread, unique, waistcoat, waterproof	assembly-diagram, automata, axle, bench hook, clamp, cam, component, cutting list, dowel, drill bits, exploded-diagram, finish, follower, frame, function, hand-drill, jelutong, linkage, mark out, set square or engineer's square	accompaniment, cookbook, cross-contamination, equipment, farm, flavour, imperative verb, ingredients, method, nationality, preparation, processed, reared, recipe, target audience, unit of measurement	apparatus, bench hook, coping saw, dowel, jelutong, mark out, modify, natural materials, plan view, playground, prototype, reinforce, structure, tenon saw, user, vice
Composite	Make and test a circuit incorporating it into the base of their game	Cut, pin, sew and decorate an apron	Produce an automata frame linked to biomes	Design and then prepare a 3-course meal	Design and create a model of a new playground featuring five apparatus, made from three different structures
Designer / Technologist	John Spinello (Inventor of Operation – the original steady hand game)	Risdon and Risdon (UK based apron makers)	Jacques de Vaucanson	Rick Stein	Rhino Play (Cornish playground company)
Lesson Sequence	**Research** – I can research and analyse a range of children's toys. **Skill** – I can cut and assemble a net. I can make and test a circuit. **Design** – I can design a steady hand game and name the components. **Make** – I can make a steady hand game that is functional and has a good appearance. **Evaluate** – I can evaluate my game by considering if it is fit for purpose.	**Research** – I can understand the idea of 'make do and mend' in war times. I can research the industries that make aprons now. **Skill** – I can use a template to mark and cut out I can join fabric using a running stitch I can attach a fastening securely **Design** – I can design an apron, including a fastening **Make** – I can make an apron by preparing, assembling and joining fabric. **Evaluate** – I can evaluate the success of my apron by having it reviewed at a fashion show.	**Research** – I can explore the movements that different shaped cams can create. **Skill** – I can measure accurately. I can saw safely. **Design** – I can design an automata based on a design brief, labelling the mechanism **Make** – I can make an automata frame I can finish and decorate my automata **Evaluate** – I can evaluate my automata based on how well it meets the design brief.	**Research** – I can research complementary flavours **Skill** – I can create a recipe and outline the key culinary skills to use **Design** – I can design a three-course meal **Make** – I can make a three-course meal **Evaluate** – I can evaluate the meal based on taste and appearance.	**Research** – I can research types of playground equipment **Skill** – I can create models, ensuring stability and strength **Design** – I can design a new playground **Make** – I can make model playground equipment **Evaluate** – I can evaluate the playground based on the protypes working as designed.
Critical skills	**Design** • Designing a steady hand game - identifying and naming the	**Design** • Designing a waistcoat in accordance to specification linked	**Design** • Experimenting with a range of cams, creating a design for an	**Design** • Writing a recipe, explaining the key steps, method and ingredients	**Design** • Designing a playground featuring a variety of different

	components required • 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' **Make** • Constructing a stable base for a game • Accurately cutting, folding and assembling a net • Decorating the base of the game to a high quality finish • Making and testing a circuit incorporating a circuit into a base **Evaluate** • Testing own and others finished games, identifying what went well and making suggestions for improvement • Gathering images and information about existing children's toys • Analysing a selection of existing children's toys	to set of design criteria to fit a specific theme • Annotating designs **Make** • 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 • Learning different decorative stitches • Sewing accurately with even regularity of stitches **Evaluate** • Evaluating work continually as it is created	automata toy based on a choice of cam to create a desired movement • Understanding how linkages change the direction of a force • Making things move at the same time • Understanding and drawing cross-sectional diagrams to show the inner-working **Make** • Measuring, marking and checking the accuracy of the jelutong and dowel pieces required • Measuring, marking and cutting components accurately using a ruler and scissors • Assembling components accurately to make a stable frame • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set **Evaluate** • Evaluating the work of others and receiving feedback on own work • Applying points of improvements • Describing changes they would make/do if they were to do the project again	• Including facts and drawings from research undertaken **Make** • Following a recipe, including using the correct quantities of each ingredient • Adapting a recipe based on research • Working to a given timescale • Working safely and hygienically with independence **Evaluate** • Evaluating a recipe, considering: taste, smell, texture and origin of the food group • Taste testing and scoring final products • Suggesting and writing up points of improvements in productions • Evaluating health and safety in production to minimise cross contamination	structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs **Make** • Building a range of play apparatus structures drawing upon new and prior knowledge of structures • Measuring, marking and cutting wood to create a range of structures • Using a range of materials to reinforce and add decoration to structures **Evaluate** • Improving a design plan based on peer evaluation • Testing and adapting a design to improve it as it is developed • Identifying what makes a successful structure

Critical knowledge	**Technical** • 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 **Additional** •To know that 'form' means the shape and appearance of an object •To know the difference between 'form' and 'function' •To understand that 'fit for purpose' means that a product works how it should and is easy to use • 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'	**Technical** • To understand that it is important to design clothing with the client/ target customer in mind • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric • To understand the importance of consistently sized stitches	**Technical** • To understand that the mechanism in an automata uses a system of cams, axles and followers • To understand that different shaped cams produce different outputs **Additional** • To know that an automata is a hand powered mechanical toy • To know that a cross-sectional diagram shows the inner workings of a product • To understand how to use a bench hook and saw safely • To know that a set square can be used to help mark 90° angles	**Cooking and Nutrition** • To know that 'flavour' is how a food or drink tastes • To know that many countries have 'national dishes' which are recipes associated with that country • To know that 'processed food' means food that has been put through multiple changes in a factory • To understand that it is 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)	**Technical** • To know that structures can be strengthened by manipulating materials and shapes **Additional** • To understand what a 'footprint plan' is • To understand that in the real world, design , can impact users in positive and negative ways • To know that a prototype is a cheap model to test a design idea