

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

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	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.					
			Area: Structures Making animal homes	Area: Textiles Create flags that celebrate where we live	Area: Structures Making boats	Area: Cooking and Nutrition Salad / fruit salad
	Area: Structures Unit: Constructing a windmill Composite: Design and construct a windmill	Area: Textiles Unit: Puppets Composite: Designing, making and decorating a hand puppet	Area: Mechanisms Unit: Making a moving picture Composite: Design, make and evaluate a moving picture	Area: Mechanisms Unit: Wheels and axles Composite: Design, make and evaluate a moving vehicle	Area: Cooking and Nutrition Unit: Smoothies Composite: Making a fruit and vegetable smoothie	

Year 2	Area: Cooking and Nutrition Unit: A balanced diet Composite: Design and make a healthy wrap	Area: Structures Unit: The King's throne Composite: Design and make the King's throne	Area: Mechanisms Unit: Fairground wheel Composite: Design and make a ferris wheel	Area: Textiles Unit: Stuffed toys Composite: Design and make a fish	Area: Mechanisms Unit: Making a moving alien Composite: Design and make a moving alien	
Year 3/4	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 healthy snack	Area: Structures Unit: Pavilions Composite: Design and make a structure (Barcelona Pavillion)		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 4/5		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: Christmas stockings Composite: Cut, pin, sew and decorate a Christmas stocking				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 3/4 and 6)	Digital World (Year 4/5)
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 – Spring 2 Create flags that celebrate where we live	Reception – Summer 1 Making vehicles	Reception – Summer 1 Making vehicles	Reception – Summer 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 The King's throne	Year 2 – Spring 2 Stuffed Toys	Year 1 – Summer 1 Wheels and axles	Year 2 – Autumn 2 Ferris Wheel	Year 2 – Autumn 1 A balanced diet
Enrichment	Build a den – use key vocabulary in this unit.	Visit to Royal Cornwall Museum to learn about toys from the past.		Visit to Lappa Valley	Visit to 'The Lost Gardens of Heligan'.
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. Design – I can design a windmill and label its components.	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. Make – I can make my puppet by following my design.	Research – I can research moving picture books. Skills – I can make a slider mechanism. Design – I can design a moving picture. Make – I can make a moving picture that uses a sliding mechanism.	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 Evaluate – I can evaluate a moving vehicle by racing it	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 Evaluate – I can evaluate a smoothie by taste testing and

	Make – I can join parts of a structure to make a windmill. Evaluate – I can evaluate my structure.	Evaluate – I can evaluate my puppet by saying what I like and dislike about it.	Evaluate – I can evaluate my moving picture by testing it.		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 mechanisms to make parts turn in a circle	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 • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times	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 guides are bits of card that purposefully restrict the movement of the slider	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 balanced Additional • To know some real-life items	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 • To know that fruits grow on trees or vines • To know that vegetables can

	• 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 know that drawing a design idea is useful to see how an idea will look	Additional • To know that in design and technology we call a plan a 'design'	that use wheels such as wheelbarrows, hamster wheels and vehicles	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)
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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	The King's throne	Ferris wheel	Stuffed toys	Making a moving alien
Area	Food	Structures	Mechanisms	Textiles	Mechanisms
Builds On	Year 1 – Summer 1 Smoothies	Year 1 – Autumn 1 Constructing a windmill	Year 1 – Spring 2 Wheel and axles	Year 1 – Autumn 2 Puppets	Year 1 – Spring 1 Moving picture
Memory Master	Quiz on Smoothies Unit	Quiz on Constructing a Windmill Unit	Quiz on Wheels and Axles Unit	Quiz on Puppets Unit	Quiz Moving picture Unit
Future Learning	Year 3/4 – Autumn 2 Adapting a recipe	Year 3 – Spring 2 Pavilions	Year 2 – Summer 2 Making a moving alien	Year 3/4 – Autumn 1 Fastenings	Year 3/4 – Summer 1 Making a mechanical car
Enrichment	Visit from Aspens – healthy eating Pizza making workshop at Pizza Express		Visit from Lady Time Traveller	Visit to Newquay Aquarium	
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 toy 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.	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.

	Make – I can use the appropriate food preparation techniques to make a healthy wrap. 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 - Grating food safely - Spreading evenly - 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 toy fish Make - Decorating a fish using fabric glue and decorative items - Threading a needle - Sewing running stitch, with evenly spaced, neat, even stitches to join fabric 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	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	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	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 where to find the nutritional information on packaging • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group • To know that nutrients are substances in food that all living things need to make energy, grow and develop • To know that 'ingredients' means the items in a mixture or recipe • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'	manipulated to improve strength and stiffness • To know that a structure is something which has been formed or made from parts • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move • To know that a 'strong' structure is one which does not break easily • To know that a 'stiff' structure or material is one which does not bend easily Additional • To know that natural structures are those found in nature • To know that man-made structures are those made by people		final stitch • To know that a thimble can be used to protect my fingers when sewing	• To know that an input is the energy that is used to start something working • To know that an output is the movement that happens as a result of the input • To know that a lever is something that turns on a pivot • To know that a linkage mechanism is made up of a series of levers Additional • To know some real-life objects that contain mechanisms
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Year 3/4					
	Autumn 1	Autumn 2	Spring 1	Summer 1	Summer 2
Topic Question	Were the Dark Ages dark?	Where does my food go?	How does life in Spain compare with life in the UK?	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 2 – Spring 2 Toy fish or Year 3 – Summer 1 Flags	Year 2 – Autumn 1 Healthy wrap or Year 3 – Autumn 1 Eating seasonally	Year 2 – Autumn 2 The King's throne or Year 3 – Spring 1 Constructing a castle	Year 2 – Summer 1 Moving aliens or Year 3 – Autumn 2 Pneumatic toys	N/A
Memory Master	Mixed quiz on Year 2 and 3 units	Mixed quiz on Year 2 and 3 units	Mixed quiz on Year 2 and 3 units	Mixed quiz on Year 2 and 3 units	Linked to science stunning start, explore electrical components and name these
Future Learning	Year 4/5 – Autumn 2 Stuffed toys	Year 4/5 – Spring 2 Adapting a recipe	Year 4/5 – Summer 2 Structures – Truss bridge	Year 4/5 – Spring 2 Pop-up books	Year 6 – Autumn 1 Steady hand game
Enrichment		Keeping a food diary	Virtual visit to Spain	Visit to The Eden Project	Visit to Cornwall Energy Recycling Centre
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 pavilion in the style of the Barcelona Pavilion.	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	Alessandro Volta (inventor of first electric battery)
Lesson Sequence	Research – I can explore the main types of fastenings. I can explain the benefits and disadvantages of each fastening.	Research – I can research how biscuits are mass produced. Skill – I can prepare ingredients by measuring and sifting.	Research – I can research different frame structures.	Research – I can research the key design improvements in the history of the automobile.	Research – I can research electrical products Skill – I can create a working circuit to light up a bulb

	Skill – I can thread a needle. I can sew using a neat running stitch. 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.	I can roll out dough to an even thickness. I can use cutters to create identical shapes. 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.	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. Evaluate – I can evaluate my structure based on stability and strength.	I can research how different mechanical systems can power a car Skill – I can make prototype chassis for different mechanical systems. 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.	Design – I can design a torch to meet a set of specific set needs Make – I can make a torch with a working circuit 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	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	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	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

	successful • Suggesting modifications for improvement • Articulating the advantages and disadvantages of different fastening types		the class • Describing what characteristics of a design and construction made it the most effective • Considering effective and ineffective designs	• 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 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	
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				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 pavilion 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 product is designed for - To know that architects consider light, shadow and patterns when designing	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 measure length.	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 - To know facts from the history and invention of the electric light bulb(s) – by Sir Joseph Swan and Thomas Edison

				• 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.	
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Year 4/5					
	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 3 – Summer 2 Flags or Year 4 – Autumn 1 Fastenings	Year 3 – Autumn 1 Baking a seasonal tart or Year 4 – Autumn 2 Adapting a recipe	Year 3 – Spring 2 Pneumatic toys or Year 4 – Summer 1 Mechanical Systems	Year 3 – Summer 1 Wearable technology	Year 3 – Spring 1 Castles or Year 4 – Spring 1 Pavilions
Memory Master	Mixed quiz on Year 3 and 4 units	Mixed quiz on Year 3 and 4 units	Mixed quiz on Year 3 and 4 units	Quiz on Electronics Unit	Mixed quiz on Year 3 and 4 units
Future Learning	Year 6 – Autumn 2 Christmas stockings	Year 6 – Summer 2 Come dine with me	Key Stage 3	Key Stage 3	Year 6 – Playgrounds
Enrichment	Arranging school festival of trees Selling products at School Christmas Fayre.	Pasty making with Cornish Pasty Company Visit Geevor Tin Mine	Visit from Blast from the Past, Mayan Conquistador Visit to Truro Museum	Greek food tasting with Aspens	Visit to The Lost Gardens of Heligan. Exploring local rivers with Forest School Lead.
Vocabulary	accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template	adaptation, cook, cross-contamination, farm, hygiene, ingredients, label, nutrient, nutritional value, process	aesthetic, cad, caption, design, design brief, design criteria, exploded-diagram, function, input, linkage, mechanism, motion, output, pivots, prototype, sliders, structures, template	boolean, device, durable, monitoring device, sensor, synthetic, variable, versatile, water-resistant, workplane (cad)	accurate, arch bridge, beam bridge, bench hook, compression, coping saw, file, mark out, 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 Gabriel Fahrenheit Anders Celsius	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 in 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	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,	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	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	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

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

		objects • To know that nutritional information is found on food packaging. • To know that food packaging serves many purposes.		• 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	• To understand how to carry and use a saw safely
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Year 6				
	Autumn 1	Autumn 2	Summer 2	Summer 2
Topic Question	Why is the Earth so angry?	How was the Battle of Britain a turning point in WWII?	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	Christmas stockings	Come Dine with me	Playgrounds
Area	Electrical systems	Textiles	Food	Structures
Builds On	Year 4 – Summer 2 Torches	Year 5 – Autumn 1 Stuffed Toys	Year 5 – Spring 1 Developing a recipe	Yea 5 – Summer 2 Bridges
Memory Master	Quiz on Torches Unit	Quiz on Stuffed Toys Unit	Quiz on Adapting a Recipe Unit	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,	adapt, annotate, detail, fabric, fastening, knot, properties, running-stitch, seam, sew,	accompaniment, cookbook, cross-contamination, equipment, farm, flavour,	apparatus, bench hook, coping saw, dowel, jelutong, mark out, modify, natural

	magnetic field, net, pliers, prototype, series circuit, side view drawing, switch, side view drawing, test top view drawing	shape, target audience, target customer, template, thread, unique, waistcoat, waterproof	imperative verb, ingredients, method, nationality, preparation, processed, reared, recipe, target audience, unit of measurement	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 a Christmas stocking.	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)	World's largest Christmas stocking Largest Christmas stocking Guinness World Records	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 Christmas stockings now, including how world records are set 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 a Christmas stocking, including a fastening Make – I can make a Christmas stocking by preparing, assembling and joining fabric. Evaluate – I can evaluate the success of my stocking by having it reviewed by others.	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 prototypes working as designed.
Critical skills	Design - Designing a steady hand game – identifying and naming the 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'	Design - Designing a stocking in accordance to specification linked 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	Design - Writing a recipe, explaining the key steps, method and ingredients - 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	Design - Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs Make - Building a range of play apparatus structures drawing upon new and prior

	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	- Sewing a strong running stitch, making small, neat stitches and following the edge - Tying strong knots - Decorating a stocking –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	- 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	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	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