Whitmore Park Primary School
Design + Technology Curriculum

Long term learning objectives by year group.

DESIGN					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design simple, appealing products that work for a particular user based on simple design criteria. Generate initial design ideas from own experiences. Develop and communicate these ideas through talk, simple drawings, and mock ups where appropriate.	Generate ideas based on simple design criteria and own experiences. Design products for others and themselves, that are purposeful, functional, and appealing. Develop, model, and communicate ideas through talking, mock-ups, drawings, and templates.	Use research to inform design. Generate realistic design ideas through an agreed design criteria and discussion, to create an appealing, functional product fit for purpose and specific user/s. Use annotated sketches, prototypes, final product sketches and pattern pieces to develop and communicate ideas.	Use research to inform design and develop design criteria. Generate and clarify ideas through discussion with peers. Collaboratively develop design criteria to inform the design of products that are fit for purpose and aimed at a particular individual or groups. Use annotated sketches and appropriate information to develop and communicate ideas. Communicate, generate and develop realistic ideas using a range of strategies E.g. prototypes, pattern pieces, annotated sketches and discussion.	Generate innovative ideas through research. To include surveys, interviews, questionnaires, and discussion. Use this information to develop a design brief and criteria for a design specification. Communicate, generate, and develop ideas, drawing on other disciplines e.g., science, maths, computing etc. Design purposeful, functional, appealing products for an intended user, that are fit for purpose and based on a simple design specification. Develop and communicate ideas through discussion, annotated drawings, drawings from different views and diagrams where appropriate. To take risks to be innovative and resourceful.	Use research including surveys, interviews, questionnaires etc to develop design specifications for a range of functional products. Develop a simple design specification, considering constraints including time and resources. Generate and develop innovative ideas and share and clarify these through discussion. Communicate ideas through annotated sketches, pictorial representations, exploded drawings.

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Year 1		*DESIGN*	*MAKE*	*EVALUATE*
	Skills	Design simple, appealing products that work for a particular user based on simple design criteria. Generate initial design ideas from own experiences. Develop and communicate these ideas through talk, simple drawings, and mock ups where appropriate.	Select and use simple utensils, tools, and equipment to perform a job e.g., peel, cut, slice, squeeze, grate and chop safely; marking out, cutting, joining, and finishing; cut, shape and join paper and card. Select from a range of ingredients and materials according to their characteristics to create a chosen product.	Explore, evaluate, and where appropriate taste, a range of products to determine the intended user's preferences for the product. Explore existing products. Discuss own ideas and designs.
	Vocabulary	Planning, investigating, design, evaluate, make, user, purpose, ideas, product.		
		Mechanisms	*Structures*	*Food*
	Knowledge	Explore and use sliders and levers. Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project.	Know how to make freestanding structures stronger, stiffer, and more stable. Know and use technical vocabulary relevant to the project.	Understand where a range of fruit and vegetables come from e.g., farmed or grown at home. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The Eatwell Guide (at GOV.uk)* Know and use technical and sensory vocabulary relevant to the project.
	Suggested Vocabulary	slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards.	cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic. circle, triangle, square, rectangle, cuboid, cube, cylinder.	Fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g., soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard.

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Year 2		*DESIGN*	*MAKE*	*EVALUATE*
	Skills	Generate ideas based on simple design criteria and own experiences. Design products for others and themselves, that are purposeful, functional, and appealing. Develop, model, and communicate ideas through talking, mock-ups, drawings, and templates.	Plan by suggesting what to do next. Select and use tools, equipment, skills, and techniques to perform practical tasks, explaining their choices. Select materials (new or reclaimed), components, and construction kits to build and create their products. Use simple finishing techniques suitable for the products they are creating.	Explore a range of existing products related to their design criteria. Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.
	Vocabulary	investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product.		
		Mechanisms	*Textiles*	*Food*
	Knowledge	Explore and use wheels, axles, and axle holders. Distinguish between fixed and freely moving axles. Know and use technical vocabulary relevant to the project.	Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using different techniques e.g., running stitch, glue, over stitch, stapling. Explore different finishing techniques. Know and use technical vocabulary relevant to the project.	Understand where a range of fruit and vegetables come from e.g., farmed or grown at home. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The Eatwell Guide (at GOV.uk)* Know and use technical and sensory vocabulary relevant to the project.
	Suggested Vocabulary	vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used.	joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish.	fruit and vegetable names, names of equipment and utensils. Sensory vocabulary e.g., soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients.

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Year 3		*DESIGN*	*MAKE*	*EVALUATE*
	Skills	Use research to inform design. Generate realistic design ideas through an agreed design criteria and discussion, to create an appealing, functional product fit for purpose and specific user/s. Use annotated sketches, prototypes, final product sketches and pattern pieces to develop and communicate ideas.	Plan the main stages of making. Select from and use a range of appropriate utensils, tools and equipment with some accuracy related to their product. Select from and use finishing techniques suitable for the product they are creating.	Investigate a range of pneumatic systems, ingredients, and structures relevant to their projects. Test their product against the original design criteria and with the intended user in mind. Evaluate own ideas and designs against given design criteria and consider the views of others to improve their work. Investigate a range of existing products that address real/relevant problems.
	Vocabulary	user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing.		
		Mechanisms	*Structures*	*Food*
	Knowledge	Understand and use a pneumatic system. Use knowledge to create a simple pneumatic system in a product. Know and use technical vocabulary relevant to the project.	Develop and use knowledge of how to construct strong, stiff shell structures. Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. Know and use technical vocabulary relevant to the project.	Know how to use appropriate equipment and utensils safely to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared, or caught. Know and use relevant technical and sensory vocabulary appropriately.
	Suggested Vocabulary	mechanism, pneumatic system, input, process, output.	shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, decision.	name of products, names of equipment, utensils, techniques, and ingredients. texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet.

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Year 4		*DESIGN*	*MAKE*	*EVALUATE*
	Skills	Use research to inform design and develop design criteria. Generate and clarify ideas through discussion with peers. Collaboratively develop design criteria to inform the design of products that are fit for purpose and aimed at a particular individual or groups. Use annotated sketches and appropriate information to develop and communicate ideas. Communicate, generate, and develop realistic ideas using a range of strategies E.g., prototypes, pattern pieces, annotated sketches, and discussion.	Order the main stages of making. Select and use appropriate tools to measure, mark out, cut, score, shape and combine with some accuracy related to their products. Explain their choice of materials according to functional properties and aesthetic qualities. Select from and use materials and components, including ingredients, and construction, according to their function and properties.	Investigate a range of existing products e.g., ingredients, components, techniques, and materials used. Test and evaluate their own products (and that of others), against design criteria, the intended user and purpose. Consider the views of others to improve their work.
	Vocabulary	evaluating, design brief, design criteria, innovative, prototype, user, purpose, function, appealing, planning, annotated sketch, sensory evaluations.		
		Mechanisms	*Textiles*	*Food*
	Knowledge	Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots. Know and use technical vocabulary relevant to the project.	Produce a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. Understand how fabrics can be strengthened, stiffened, and reinforced where appropriate. Know and use technical vocabulary relevant to the project.	Select and know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of seasonal, fresh, and processed ingredients appropriate for their product, and whether they are grown, reared, or caught. Know and use relevant technical and sensory vocabulary appropriately.
	Suggested Vocabulary	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating.	seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings.	name of products, names of equipment, utensils, techniques, and ingredients. texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet.

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Year 5		*DESIGN*	*MAKE*	*EVALUATE*
	Skills	Generate innovative ideas through research. To include surveys, interviews, questionnaires, and discussion. Use this information to develop a design brief and criteria for a design specification. Communicate, generate, and develop ideas, drawing on other disciplines e.g., science, maths, computing etc. Design purposeful, functional, appealing products for an intended user, that are fit for purpose and based on a simple design specification. Develop and communicate ideas through discussion, annotated drawings, drawings from different views and diagrams where appropriate. To take risks to be innovative and resourceful.	Produce detailed lists of equipment and fabrics relevant to their tasks. Write a step-by-step plan, including a list of resources required. Select from and use, a range of appropriate utensils, tools, and equipment accurately to measure and combine appropriate ingredients, materials, and resources.	Investigate and analyse products linked to their final product. Compare the final product to the original design specification and record their evaluations. Test products with intended user in mind and critically evaluate the quality of the design, manufacture, functionality, and fitness for purpose. Identify the strengths and areas for improvement in their own and others work.
	Vocabulary	design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype.		
		Mechanisms	*Electronics*	*Food*
	Knowledge	Understand that mechanical systems have an input, process, and an output. Understand cams can be used to create a variety of movements in a mechanical object. Understand the shape of the cams will affect the speed and direction of movement. Know and use technical vocabulary relevant to the project.	Understand and use electrical systems in their products linked to science coverage. Making connections to real and relevant problems, apply understanding of electrical systems. (introduce series circuits, switches, bulbs) Know and use more accurately the technical vocabulary relevant to the project.	Know how to use utensils and equipment including heat sources to prepare and cook food. Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary.
	Suggested Vocabulary			

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Year 6		*DESIGN*	*MAKE*	*EVALUATE*
	Skills	Use research including surveys, interviews, questionnaires etc to develop design specifications for a range of functional products. Develop a simple design specification, considering constraints including time and resources. Generate and develop innovative ideas and share and clarify these through discussion. Communicate ideas through annotated sketches, pictorial representations, exploded drawings.	Produce detailed lists of equipment and fabrics relevant to their tasks. Write a step-by-step plan, including a list of resources required. Select from and use, a range of appropriate utensils, tools, and equipment accurately to measure and combine appropriate ingredients, materials, and resources.	Explain and understand how key events/individuals in D&T helped to shape the world. Generate own design criteria and critique ideas and products against these, recording the evaluations. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality, and fitness for purpose. Consider the views of others to improve their work.
	Vocabulary	function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype, exploded diagram.		
		Electronics	*Textiles*	*Food*
	Knowledge	Use and create more complex circuits. Making connections to real and relevant problems, apply understanding of electrical systems. (use series circuits, switches, bulbs, buzzers etc) Know and use more accurately the technical vocabulary relevant to the project.	Produce a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics. Understand how fabrics can be strengthened, stiffened, and reinforced where appropriate. Know and use technical vocabulary relevant to the project.	Know how to use utensils and equipment including heat sources to prepare and cook food. Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary.
	Suggested Vocabulary			

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OVERVIEW OF MID TERM PLANS

Coverage					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
STRUCTURES Design, make and evaluate a chair for 'Arty', the Art Room mascot.	***MECHANISMS*** - *Wheels and Axles.* DME a vehicle to transport firefighters in the Great Fire of London using junior hacksaws.	***STRUCTURES*** DME a portable shelter for a hunter gatherer using selected resources (range given). Investigate tripods	***TEXTILES*** DME a book cover to protect their favourite book.	***ELECTRONICS*** DME and electronic greetings care using a simple circuit.	***ELECTRONICS*** - DME an electric steady hand game using simple circuits and switches.
MECHANISMS – *Levers + sliders* DME a pop-up page using levers and sliders linked to a class topic.	**TEXTILES** – use running stitch to create a hand puppet based on an African animal.	***MECHANISMS*** DME a Pneumatic toy based on Roman soldiers moving behind Hadrian's Wall.	***MECHANISMS*** DME a pop-up book using levers and linkages, based on Rivers.	***MECHANISMS*** - *Cams* DME a toy to sell using CAMS. (*e.g., Ancient Greek toy*)	***TEXTILES*** 'Bag for Life'. Research, design and make a bag for life, showing an influence of South/North American culture.
FOOD To plan and prepare a healthy snack for summer e.g. a fruit kebab. *(Emphasis safe use of tools)*	***FOOD*** DME a healthy wrap using homegrown ingredients from school garden.	***FOOD:*** DME pizza for Whitmore Pizza Company. Investigate range of toppings- linked to different countries: Italy, Greece, Britain	***FOOD:*** DME create a fruit crumble using seasonal fruits	***FOOD:*** DME a kebab suitable for a summer BBQ - Create a balanced dish.	***FOOD:*** DME make bread. Choose and incorporate chosen flavour/s.

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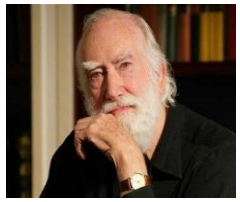
MID-TERM PLANS – Year 1

Y1 TERM		LINK		
Autumn2 7 Weeks	Structures		Design, build and decorate a chair for "Arty" the art room mascot. Look at different types of chairs and their key features. What makes a good chair?	DESIGN: Learn and talk about the importance of clear design criteria. Consider individual requirements and preferences in design. Consider the materials to be used. MAKE: Making stable structures from card/paper etc Experiment with different strengthening techniques. Choose the strengthening technique/s for your design. Sketch a design for Arty's chair. Make a chair for Arty. Explore other materials and their impact on the design. EVALUATE: Does the finished chair meet the design criteria? Test the chair for suitability, strength, stability. What is good about the chair and how could it be better? Would you modify your design? If yes how, if not why? TECHNICAL: I can describe the purpose of my structure I can explain how changing the shape of a material can make it stronger and more stable.
Spring	Mechanisms, Slides & Levers		Explore levers and sliders to make a moving book linked to a class project.	DESIGN: Look at pop up books, cards etc and how they are designed and work. Make sample levers and sliders to help in your design. Explore, plan and sketch your design. MAKING: Assembling sample mechanisms to create various movements. Trial different materials and set ups. Using your sketched design create your page. EVALUATE: Reflect on finished page / book Does it work? What works well? What could be improved? How? TECHNICAL: I can explain how a lever and a slider work using the correct technical vocabulary. I understand how to use levers and sliders to create different movement.
Summer 2	**FOOD TECH** – Class based.		Handle and explore fruits and vegetables and learn how to identify which category they belong to. Learn about good food hygiene and safety. Design and prepare a summer fruit/vegetable kebab.	***RESEARCH/EVALUATE:*** • Know where UK fruit and vegetables come from – E.g. Apples, pears and plums grow on trees. Strawberries, raspberries grow on plants. • Know that oranges, lemons, grapefruit, pineapple, and bananas are grown in hot countries e.g. Spain. • Know what makes a healthy diet – we should eat more fruit and veg, and less fats and sugars. • Know that fruit contains very little fat but does have healthy sugars. • Identify the foods a product is made from.

			https://www.bbcgoodfood.com/recipes/rainbow-fruit-skewers ***VOCABULARY:*** • Blunt/sharp knife • Chopping board • Skewers • Cutters • Chopped • Diced • Sliced • Bacteria • Virus • Contaminate • Flavour • Flavour combinations • Sweet • Savoury • Bitter • Acidic etc	• Identify and taste a range of fruit and vegetables. Which would make a good fruit kebab/vegetable? Can more than one flavour be mixed? ***TECHNICAL KNOWLEDGE:*** • To know why we need basic food hygiene when preparing food (Clean hands) • Know how to slice soft fruit with a knife (Blunt) using the bridge cutting technique. • To know to hold fruit on a chopping board in one hand and cut with the other. • To know that you can stamp out a shape in flat fruit with a cutter. • To know there can be germs and dirt that can give an upset tummy if it goes into our food. ***DESIGN:*** • Create a simple recipe for a fruit kebab. • Work to a design brief and success criteria – to be given by the teacher. • Think about what is being used and how much of each ingredient is needed. • Draw and label what the final product should look like (front only). ***MAKE:*** • Following your recipe chop your chosen fruit and/or vegetables remember about being safe and how to work hygienically. • Help to make the fruit kebab. • Follow instructions given and select the correct tools for the job. ***EVALUATE:*** • Evaluate the different taste combinations tried. • Describe the appearance, smell, and taste of the kebab. • State whether their product met the simple criteria. • Say what the like/dislike about their product.

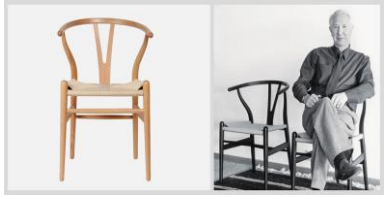
DESIGNERS – Year 1



Eric Hill
Author/Illustrator

Noboru Nakamura
Poäng chair designer

Gold Medal Camp Furniture Co.
Director's chair



Hans Wegner
Wegner Wishbone Chair

Moving pictures - Simple levers, wheels, and sliders

Structures - Chairs

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MID-TERM PLANS – Year 2

Y2 TERM		LINK		
SPRING 1 6Wks 3 days	MECHANISMS Wheels and axles	History	Make a wheeled vehicle to help transport firefighters during the Great Fire of London Look at what vehicles were available during the Great Fire of London.	DESIGN: Explore axles and wheels. How they work together and how they can be attached Discuss and agree design criteria for a vehicle to carry firefighters considering purpose, need and materials available. What does the vehicle need to carry and how will they be attached/carried? Use own knowledge of historical design and structures to plan. Develop a design using drawing and talk about choices made. MAKE: Make the vehicle. Cut and assemble accurately and safely. Select appropriate tools and materials e.g., scissors, hacksaw, dowl, glue etc. EVALUATION: Did the drawn design make a good vehicle for firefighters? What would change? Identify what works well and what could be improved? Is the vehicle strong enough? Does it move well? Does the design allow the axles and wheels to work smoothly and can the vehicle get to a fire quickly enough? What else does the vehicle need to carry? TECHNICAL: I understand and can explain how axles and wheels work together. I understand axle and wheel size, strength and thickness make a difference. I can explain the difference between a fixed and a free axle.

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				I can talk about how stable ,strong and effective the wheels and axles on my vehicle are.
TERM		LINK		
SUMMER 1 5 wks 4 days	TEXTILES		Joining two pieces of material together using a simple running stitch to create a finger/hand puppet. To know a needle has to be threaded and a simple knot a the end of the thread helps secure the stitching To be able to identify the parts of a sewing needle point and eye, and how to use one safely.	DESIGN: Look at a variety of finger/hand puppets and their design Develop and sketch a design for a simple finger/hand puppet using a template. Discuss the making process and agree criteria for finished puppet e.g. joined securely, big enough to fit over the finger/hand etc MAKE: Create sample pieces of running stitch. Try different length of stitch and a range of threads. Join two sample pieces of material together using running stitch. Use a template to mark the two sides of the puppet. Use the drawn design to decorate the two pieces of fabric . Fix the two pieces of material together securely using running stitch to create the puppet. EVALUATION: How well does the puppet work? What works well and what could be improved? Are there other methods of joining two pieces of material together and would they work as well as running stitch? Evaluate own finished puppet and those made by others. Consider their own learning, was it hard/easy to stitch their puppet? What was tricky and did they improve? What would help improve their skills level even further? TECHNICAL I can explain how to make a running stitch using the correct technical vocabulary. I can talk about how to use a needle safely and explain what the point and eye are for. I know how to join two pieces of material together.
Summer 2 Garden	**FOOD** – Class based: ***Healthy and varied diet.***	 *John Montagu, 4th Earl of Sandwich.*	**<u>OVERVIEW:</u>** The children will make a healthy wrap from a mix of school grown and shop brought produce. The children will understand that it is healthy to eat fresh foods that are locally grown.	***RESEARCH/EVALUATE:*** • To research the story of John Montagu, 4th Earl of Sandwich to understand that a sandwich was designed for a purpose. • Understand and use the basic principles of a healthy and varied diet (5 portions of fruit and vegetables a day) to prepare dishes, including how fruit and vegetables are part of *The Eatwell guide*. • Know where which meat products come from which animals e.g. Beef – Cows, Bacon, ham – Pig, Chicken, Eggs – Hen, Lamb – Sheep. • Taste a variety of different wraps and identify good food combinations. What combinations do they like? Which food combinations work well together? • Know where fruit and vegetables come from E.g. Potatoes and carrots grow in the ground, peas, tomatoes, peppers, and cucumbers grow on plants above the ground.

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			VOCABULARY: • Blunt /sharpknife • Chopping board • Cheese slice • Box grater • Peeler • Sweet • Bitter • Savoury etc	***TECHNICAL KNOWLEDGE:*** • Use simple utensils and equipment E.g. How to hold a knife/peeler to peel, cut, slice etc safely. • I know that when making food I need clean hands and a clean surface. • Know what is needed to keep safe when making food - Invisible germs can be removed with soap and water, safe use of tools. ***DESIGN*** • Create a healthy garden wrap. • Brief and success criteria to be given by the teacher. • Annotate a simple drawing making notes about ingredients and preparation techniques - What kinds of food does it have in it e.g. veg, meat, dairy etc? What is there most of? ***MAKE*** • Taste some of the produce growing in the school garden. • Wash, chop, grate, peel and slice the ingredients. • Should there be more garden produce in the wrap than for example cheese, meat etc • Use their design to choose key equipment and ingredients needed. ***EVALUATION*** • Has my wrap got all the ingredients planned? • State whether their product met the success criteria. • Say what they like/dislike about their product - Does it smell good? Does it taste good.? Does it look good?

DESIGNERS – Year 2

The invention of the wheel
Mesopotamia

Mechanisms- Wheels and Axles

Margarete and Richard Steiff
Soft toys

Textiles- Finger puppets

Story of John Montagu, 4th Earl of Sandwich

Story of the Cornish Pasty

Food- Healthy garden wrap

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MID-TERM PLANS – Year 3

Y3. TERM		LINK		
AUTUMN 2 7 weeks	STRUCTURES	History	Pupils will learn more advanced construction, investigating tripods. They will use what they already know about both Hunter Gatherers and construction techniques to help design and construct a suitable portable shelter.	***DESIGN:*** Consider and agree the design criteria considering users' needs purpose of the construction and available materials. Sketch a design and explain it to others. ***MAKE:*** Investigate tripods and why they are important in construction. Explore ways to strengthen and stabilize tripods by making mock ups using different materials. Make a shelter. ***EVALUATE:*** Ongoing evaluation during the construction phase. Does the design meet the design criteria? What works well and what could be improved? Talk about their own finished product with others and discuss the shelters made by other pupils including asking questions about design choices. ***TECHNICAL*** I can use a range of construction techniques to create a structure. I can use what I have already learnt to help make successful structures to fit agreed design criteria. I can use the correct technical vocabulary to explain and describe my structure to others.
SPRING 2 5 weeks	MECHANISMS & PNEUMATICS	History	Design and make a pneumatic toy depicting Roman Soldiers moving behind Hadrian's wall.	DESIGN. Investigate mechanisms powered by pneumatics used in everyday life. Design a pneumatic mechanism that will make a toy Roman soldier move and plan how to construct it. MAKE: Investigate pneumatics by experimenting with various materials. Make mock-ups of a simple pneumatic mechanisms and test them out. Use this to help you with your design and plan. Choose the materials and tools you will need to make your design. Use previous knowledge to create a well-made toy with a pneumatic mechanism that gives it movement. EVALUATE: Ongoing evaluation during the experimentation and construction phase. Does the design meet the design criteria? What works well and what could be improved? TECHNICAL. I can explain how pneumatics can be used to move objects. I can make a simple pneumatic mechanism and use it to move an object. I can use appropriate technical vocabulary to when talking about and explaining pneumatics with others.

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SUMMER 2	**FOOD** – Class based: "***Where does your food come from?"***	***LINK:*** Healthy body, healthy mind.  *Raffaele Esposito.*	**OVERVIEW:** The children will learn about where food comes from and associated environmental impacts. They will also be able to identify if the food has been grown, reared, caught, and/or processed. The children will know the origins of the pizza, and why it was invented. They will use all their knowledge to design and make a pizza. Can you make a pizza using only foodstuffs that can be grown in the UK at this time of year? **YouTube videos:** https://www.youtube.com/watch?v=T1rpG3aAMOA https://www.youtube.com/watch?v=PRn5iONxSQQ **Useful websites:** https://www.foodmiles.com https://www.about.sainsburys.co.uk/eggtracker **VOCABULARY:** • Sharp knife. • Chopping board. • Box grater. • Oven. • Oven tray. • Oven gloves. • Garlic crusher. • Reared. • Grown. • Caught. • Processed. • Food miles	**RESEARCH/EVALUATE:** • Consider what is available in UK shops and where it is grown. • To research and understand the origins of the pizza and know that Raffaele Esposito is considered the inventor of the modern-day pizza. • To know that pizza is traditionally a bread base with a tomato sauce and cheese and a variety of other toppings. • Know that toppings on a pizza can be changed. • Look at pizzas and the kind of ingredients used to make them. • Know that herbs are plants that grow from seeds. • Know that pepperoni, ham, and prosciutto are meat that is taken from a pig. • Know that mozzarella is made from buffalo's milk, feta is made from sheep milk and cheddar is made from cow's milk. • Know that an artichoke is a vegetable: the edible portion of the plant Is the flower bud before it blooms. • I know that climate affects food growing and can talk about this. • Taste a variety of possible toppings and decide what work well together. Use this to aid design choices. **TECHNICAL KNOWLEDGE:** • Practice chopping skills safely to prepare ingredients e.g. slice, dice and make notes of where they could be used. • Know how to use appropriate equipment and utensils to prepare and combine food. E.g. Box grater to prepare cheese. • To know how to use the oven to bake and cook food safely. • To know about a range of fresh and processed ingredients appropriate for their product and whether they are grown, reared, caught and/or processed. **DESIGN:** • Agree design criteria and create a recipe and ingredients list based on the needs and wants of a group/individual. • Gather information about the needs and wants from an individual/group. • Choose toppings that you think will taste good together.

				• Draw what your final pizza will look like showing all the toppings. • Annotate designs with information about which techniques that will need to use e.g. Cheddar cheese (grated), and ingredients selected. • Annotate designs with information about where ingredients are from using product information on packaging/labels. • Explain how their design meets the design criteria. • Use web-based recipes to develop and communicate ideas. **MAKE:** • Plan the main stages of a recipe, listing ingredients, utensils, and equipment. • Select and use the appropriate utensils and equipment to prepare and combine ingredients. • Ensure good food hygiene techniques are understood and followed. Safely prepare all the fresh ingredients. • Follow the recipe to make your pizza. **EVALUATION** • Evaluate the final product with reference to design criteria/views of others - Taste the pizza, considering smell, flavour combinations and texture. • Were all the ingredients produced in the UK? • How many countries did the ingredients come from? • Could all/any of the ingredients have been sourced from the UK?

MID TERM PLANS – Year 4

Y4. TERM		LINK		
AUTUMN	TEXTILES		Pupils will learn to use techniques like applique	DESIGN Find out about and consider existing designs featuring stitching and appliqué.

			and extend their knowledge of other stiches. They will use these to design and decorate a fabric book cover for their favourite book.	Agree design criteria. Sketch and make annotated drawings of design for a book cover include measurements and information on techniques to be used. Ensure the design meets the intended purpose. Gather information from a chosen book and how the book cover will be used. Consider suitability of your design choices. E.g. it must be big enough to hold the book, strong enough, able to fit in a school bag or on a shelf, well made. Etc MAKE Practice new stiches on sample materials. Experiment with applique on sample material. Measure, mark and cut with good accuracy. Follow your design and construct your book cover ensuring is fit for purpose and joins are strong. EVALUATION Does the finished product meet the design criteria? Compare finished book cover with the design drawings. What is the same? What is different? Why? What would you change next time? TECHNICAL Increased understanding of ways to join fabrics and vocabulary associated. Talk about the importance of previous knowledge and experience.

				Understand fabrics can be layered for visual effect and explain how they have used this. Can use a variety of stitches to decorate fabric, know their names and explain/demonstrate how to make them. I can explain what applique is and how to use it. I can make something for a purpose and use the correct technical vocabulary when discussing it with others. Evaluate own and others finished work.
SPRING	MECHANISMS> Levers and Linkages.		Investigate, explore, and build with levers and linkages to create a pop-up card or book page.	DESIGN Look at how levers and linkages are used in everyday life. Develop a design according to an agreed list of design criteria. Create prototypes and test them to inform final design. Design a pop-up card/book page using what you have learnt about levers and linkages. MAKE Select appropriate tools and materials to construct your prototypes and final design. Make prototypes of mechanisms to evaluate. Measure, mark and cut accurately to ensure a good quality finish. Consider strength and stability of your pop up. EVALUATE Does the final product meet the design criteria. What went well? What could be improved? designs discussing process, materials and ideas that could improve future designs using levers and linkages. TECHNICAL

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				I can use correct technical vocabulary to talk about and explain levers and linkages in my design. I can make more complex structures that move.
SUMMER 2	**FOOD** – *Seasonality*.	**LINK:** Mary Berry. 	**OVERVIEW:** The children will learn about seasonality – food is fresher, sweeter, and harvested at the point when they are naturally ripened. When foods are eaten out of season, they are often harvested early and undergo a process. The children will make a seasonal fruit crumble. They will need to investigate what fruits are available in the summer - Find out about and consider country of origin and seasonality. The children can also consider which fruits are available in the UK during the summer, to reduce the distance their ingredients have had to travel.	**RESEARCH/EVALUATE:** • Understand seasonality of foods in the UK and how this affects availability and price. • Understand more about fruits, how flavours combine and are changed through the cooking process. • Use vocabulary connected to seasonality and sustainability when considering fruit grown locally against fruit brought in. • Know that a crumble has a fruit base and a crunchy topping. • Know that when fruit is in season, it has ripened naturally and is ready to be eaten. • Know that when fruit is out of season in this country, it must be imported from another country and that this affects availability and cost. • Research seasonal fruit and availability locally. • Research and understand when the following fruit are in season: Blackberries, Damsons, Pears, Plums, Raspberries, Rhubarb, Strawberries, Apples, Elderberries, Cranberries are in season. • Know that a crumble topping can be made from sugar, butter, plain flour, demerara sugar – but can also contain oats. • Know some fruits must be stewed (Heated on a hob). • Know that fruit needs to be sweetened before cooking. **TECHNICAL KNOWLEDGE:** • Know how to use appropriate equipment and utensils safely to prepare and combine food. E.g. Using the bridge grip to chop up fruit. • Know how to prepare the fruit and crumble topping using good food hygiene and safety techniques at all times.

			VOCABULARY: • Seasonal. • Sharp knife. • Chopping board. • Hob. • Oven. • Reared. • Grown. • Caught. • Processed. • Stew(ed). • Peel. • Season. • Simmer. • Weighing scales. • Spatula. • Core. • Preheat. • Tender. • Compote.	• Know about a range of fresh and processed ingredients appropriate for their product and whether they are grown, reared, or caught. • Know and use relevant technical and sensory vocabulary appropriately. • Weight out ingredients accurately. **DESIGN:** • Gather information about the needs and wants from an individual/group. • Generate their own design criteria reflecting the needs and wants of an individual/group, taking into consideration appearance, taste, texture, and aroma. • Plan the main stages of a recipe listing ingredients, preparation, method instructions, as well as the utensils and equipment needed. • Find out what is available and choose a fruit or a combination of fruits to make a seasonal crumble. Consider flavour combinations and levels of sweetness. • Use annotated sketches to develop and communicate ideas, with information about technical choices and ingredients selected. **MAKE** • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Follow your recipe developed in the design stage. • Weigh out your ingredients accurately. • Prepare the fruit and crumble topping using good food hygiene and safety techniques at all times. **EVALUATE** • Taste your finished cooked crumble and consider taste, smell, texture, and sweetness. How is the cooked fruit different from the raw fruit? • Did the recipe work? Or were adjustments made? Why? What was the outcome? • Evaluate their products with reference to their design criteria as well as feedback from others. • Suggest ways to improve their product. E.g. Are their fruits that would not make a good crumble? Which? And why?

MID TERM PLANS – Year 5

Y5. TERM		LINK		
AUTUMN	Electronics Simple Circuits		Draw on previous knowledge of simple electrical circuits.	DESIGN Apply scientific knowledge to generate design ideas. Look at examples of electronic cards in use today.

			Develop this further to create an electronic greetings card for a friend or relative.	Identify a target audience and consider needs and preferences. Experiment and decide on the best way to incorporate the circuitry into your final design. Use drawings, sketches, annotation, and circuit diagrams to create a card design that incorporates a circuit which activates on opening. MAKE Make prototype circuits and test. Consider implications/importance of size etc. Select appropriate materials based on their properties, (conductor/insulator etc). Use your design to create a greetings card with a concealed circuit. EVALUATE Does it work? How close to the design is the finished product? What works well? What could be improved? Would another type of circuit work better? Will it appeal to its target audience? Why? TECHNICAL I can use diagrams and symbols to represent a circuit. I understand the related terminology e.g. insulator, conductor, LED, battery, terminal etc and use them to talk about my design. I can explain how to build a simple circuit.
SPRING	Mechanisms and Cams		Design and make a toy which moves using CAMS	DESIGN

				Design a toy for someone you know. Your design should consider their age and interests. List your design criteria. Research toys that work using CAMS. What can you learn from these? (Automatons) Use drawings, diagrams including exploded and cross-sectional diagrams. Indicate suitable materials and tools to be used. MAKE Experiment with CAMS to decide which movement suits your toy. Make mock ups to test out. Make good choices re materials and tools available and use these safely. Follow your design to make a fully functioning toy. Measure and mark accurately. Cut accurately. Ensure best finish possible which is suitable for the intended user. EVALUATE Does the finished toy meet your design criteria? Does it look like your design? Does it move in an interesting and engaging way to interest the user? Is it strong enough to be played with? Is the toy suitable for the age and interests of the user? How? What worked well? How could you improve your design? TECHNICAL

				I understand and can explain the relationship between the CAM, follower, axle, and topper. I can explain how to make a stable frame to support a mechanism and explain why this important.
SUMMER 2	**FOOD**: *Balanced diet.*	**LINK**: Marcus Bawden. 	**OVERVIEW**: The pupils will find out about what makes a balanced diet and why it is important. They will research, design and make a well balanced kebab for a summer BBQ. https://www.bigoven.com/recipe/prawn-and-vegetable-kebabs/1793936	**RESEARCH/EVALUATE**: • Know the history of a kebab, where it originated from and how it became popular in the UK. • Know that kebabs are made by mounting pieces of meat, fish, and/or vegetables on a skewer and typically cooked over a fire. • To understand different cooking methods for cooking kebabs – typically on a BBQ but also under a grill. • Know a grill can be found in an oven and uses gas/electricity to cook the food. • Know that a grill heats food from above using an element that heats and a BBQ cooks food from below and has a live flame.

			VOCABULARY: • Marinate • Infuse • Tender • Grown • Reared • Caught • Processed • Nutritious • Balanced diet • Vitamins • Mineral • Fibre • Starchy food/carbohydrates • Protein • Saturated fat • Unsaturated fat • Dairy • Skewers • Charcoal	• To know that Marcus Bawdon lives in Devon, UK, that he runs a BBQ school from his home, and he has written books to educate people on how to cook well on a BBQ. • To know that a balanced diet will contain half a plate of fruit/vegetables, a quarter carbohydrate and a quarter should be protein. • Know that protein sources include meat, fish, beans, and nuts. • Know that carbohydrate sources include bread, rice, pasta, potatoes, pasta and cous cous. • Consider which food groups go together using existing web-based recipes. • Know that kebab ingredients can be covered in a marinade and left for a period of time before cooking, which gives them extra flavour. • Using research and recipes, know which food combinations and flavours work well together. • Investigate a range of existing products making comparisons between them. • To research good sources of meat, seafood and vegetables for kebabs and understand/explain why they work well on a skewer. • To know which foods are grown, reared, caught or processed. • Know that food will need turning periodically when under the grill/on a BBQ to ensure the food is cooked through and evenly. **TECHNICAL KNOWLEDGE**: • To know how to light a BBQ safely and what resources they need E.g. charcoal, firelighter and matches/lighter. • To know when charcoal is ready to cook on based on the colour. E.g They will change from black to ash grey. When they are mostly ash grey, they are ready for cooking. • To know how to check different foods to check they are cooked thoroughly. E.G Chicken needs to be white all the way through. Prawns will change from blue to pink. • Know that thoroughly cooked food kills harmful bacteria. Undercooked food could cause food poisoning; therefore, it is important it is cooked properly. • To know how to use utensils and equipment properly and safely to cook food. • Know and use relevant technical and sensory vocabulary when talking about their work. • I can name the various food groups and give examples. • I understand that a balanced diet is essential for good health. • I know and can explain where my kebab ingredients came from. **DESIGN**: • Generate ideas using research and discussion with peers to develop a design brief and criteria for a design specification. • Explore a range of initial ideas and make design decisions to develop a final product linked to user and purpose.

				• Decide what food groups to include in your kebab, consider flavour combinations and how much of each food group to use to make a well balance kebab. • Write a step-by-step recipe including annotated exploded diagrams, list of ingredients, equipment, and utensils. • Know how budget and profit could change their designs/products. • Design a product based on the resources available to them. • Find creative solutions when resources are limited. **MAKE**: • Cut, prepare, and put together safely your kebab following your recipe and method. • Ensure all food hygiene and safety procedures are remembered and followed. • Select and use appropriate utensils and equipment accurately to measure and combine ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. • Make annotations during the making process to reflect changes made to overcome difficulties in function, aesthetics and budget. **EVALUATE**: • Taste test the final product with reference back to design brief and specification. • Take into consideration the views of others when identifying and suggesting improvements. • How many food groups are represented. Why? • Is the amount of each food group balanced? • Make evaluations to reflect the outcome of budget and profit.

MID TERM PLANS – Year 6

Y6. TERM		LINK		
Autumn	ELECTRONICS. Using simple circuits and switches.		To build on previous knowledge of simple circuits and switches to create an electronic game e.g. 'Steady hand game'.	DESIGN Look at Steady hand games already available. How do they work? Decide and agree design criteria. Use diagrams, annotated drawings, exploded and cross-sectional diagrams to record your design. Use 'Mock Ups ' in your design process.

				Consider materials and tools available when making design choices and record what you will be using. MAKE Follow your design drawings and information. Measure, mark and cut materials including wood accurately selecting appropriate tools to do so. Work safely and follow all safety guidelines to ensure you and others are safe. Assemble components accurately to create your electronic game. It should be fully functional with a good finish. EVALUATE Does the game meet the agreed design criteria? Does it match the drawings and diagrams? If not, why? Is the game entertaining and challenging enough for the user but not impossible to play? Is the game robust enough for repeated use? Does the designed circuit and switching mechanism work? Does the visual appearance make it attractive to the intended user? TECHNICAL I can explain how my 'Steady hand Game' works using the appropriate technical vocabulary. I used my previous knowledge of construction and joining techniques to create a stable and robust game which can be played multiple times.

				I can talk about, explain and demonstrate how a circuit and a switch work, and use my design instructions to explain how to build my game to another.
Spring 1	TEXTILES	South America/ North America culture (GEO)	Research, design and make a Bag for Life.	DESIGN Look at how bags are constructed and what materials are used in everyday life. Consider sustainability and environmental impact. Decide on and agree design criteria for a 'Bag for Life'. Consider what you know about American Design and incorporate this in your design. Use drawings, diagrams, annotations, notes and exploded diagrams in your design process. Include measurements and information on materials. MAKE Following your design instructions and diagrams, create templates to create pattern pieces, measure, cut accurately Ensure everything fits together so you can construct your bag neatly and with a good level of precision. Decoration should include any notations / information for the user. Use your chosen method to attach the front to the back of the bag and the handles. Check for strength during the process. EVALUATE Does the finished bag meet the design criteria? Does the finished bag look like the design drawings? If not, why?

				Does the bag carry a message to the user about the importance of reusing it? How? Does the decoration reflect the art design of the Americas. What worked well? What worked less well? How could I improve my design? TECHNICAL I can construct a bag that is strong enough to be used repeatedly using appropriate, strong joining techniques. I can explain how I made my bag and how it matches my design brief and criteria. I have produced clear design instructions that can be followed by another to successfully make a similar bag. I can suggest ways that my design could be made even better using appropriate technical vocabulary.
SUMMER 2	**FOOD**: *Processed foods – Bread.*	**LINK:**	**OVERVIEW:** The pupils will understand the term processed foods and learn how to make a type of processed food: Bread. They will research different types of breads, the processes used to make them, before designing and making their own.	**RESEARCH/EVALUATE:** • I know processed foods are foods that have grown naturally and had anything done to them to change their natural, raw state. (E.g. that has been washed, cleaned, milled, chopped, heated, pasteurised, blanched, cooked, canned, frozen, dried, dehydrated, mixed or packaged.) . I know not all processed foods are unhealthy but some can contain high levels of salt, sugar and fat or may have lost some of their nutrients during processing. • I know that flour is a processed food. • I know that bread is a processed food. • Know that bread is a common food eaten all over the world. • I know that bread originates from different parts of the world e.g loaf or roll (UK), pitta (Arabic), naan (India), wrap (Mexico), bagel (Poland), ciabatta (Italy), chapatti (India) and focaccia (Italy).

			VOCABULARY: • milled / milling • pasteurised • blanched • canned • dehydrated • whole grain • bran • wheatgerm • yeast • knead • prove • nutrients • nutritious	• I know that in the UK we can make and buy different types of bread, that originate from all over the world. • I know that the ingredients to make basic bread are Flour, Yeast, water and salt. • I know Warburtons is the largest bread bakery brand in the UK, started when Thomas and Ellen Warburton owned a vegetable shop. Sales had slumped so Ellen decided to bake bread to sell in her shop. • I know Warburtons started to make bread in 1876 (same era as Florence Nightingale). • https://www.warburtons.co.uk/our-company/sustainability/teaching-resources/bread-making-project/ • Wheat is grown, harvested and the grains are milled to extract the flour. • I know the flour is sieved to remove the bran and wheatgerm to make white flour. • I know that wholemeal flour is made by milling the whole grain. • I know the bran provides B vitamins and dietary fibre which helps keep our digestive system healthy. • I know that wheatgerm is a concentrated source of protein, B vitamins and vitamin E. • I know yeast is a micro-organism = 'small living thing'. • I know that when the yeast is dry, it is dormant (sleeping). When warm water is added to the yeast, it comes to life and produces gas called carbon dioxide which causes bread dough to rise. • I know that you can add toppings to create different tasting bread. • I know you can plait, twist, combine, slash to make the bread take on different shapes. • I know that you can add a variety of additional ingredients to bread dough to change its flavour e.g. salt, herbs, onion, olives, nuts, seeds, raisins etc. • Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using tables/charts/graphs. **TECHNICAL KNOWLEDGE:** • I know you need to knead the dough for a long time. • I know you must leave the dough to prove in a warm environment to help the bread to rise before cooking. • I know that the gas created by the yeast forms bubbles in the dough, which make it rise and improve the texture of the bread. • I can measure/weigh ingredients accurately. • I know that when I add the water to the yeast it must be just warm to the touch (38C approx. with a thermometer) to activate the yeast. • If water is too cold it won't activate the yeast, if the water is too hot it will kill the yeast. • I can choose suitable additional ingredients and toppings to enhance the flavour of my bread. • To know how to use the utensils and equipment including heat sources safely, to prepare and cook the bread. • Know how to use relevant technical and sensory vocabulary.

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				DESIGN: • Generate ideas through research and discussion with peers/adults to develop a design brief and criteria. • Identify who they are designing for and its purpose. • Ensure the needs of the user is reflected in the annotations. • Explore a range of initial ideas and make design decisions to develop a final product linked to a user and purpose. • Use words, annotated sketches, and information to communicate ideas. • Designs show cross-sections and/or exploded views. **MAKE:** • Create a recipe including: a list of ingredients with weights, step-by step method 'method' instructions with timings (if appropriate), and a list of the utensils/equipment required. • Select and use appropriate equipment and utensils to accurately measure and combine the ingredients. • Make, decorate, and present their bread appropriately for the intended user and purpose. **EVALUATE:** • Compare their products to other products on the market. • Make detailed evaluations for taste, function, and aesthetics. • Evaluate the final product with reference to the design brief/criteria, considering the views of others when identifying improvements. • Discuss what went well and went less well. Suggest ways to improve the process and final product.