

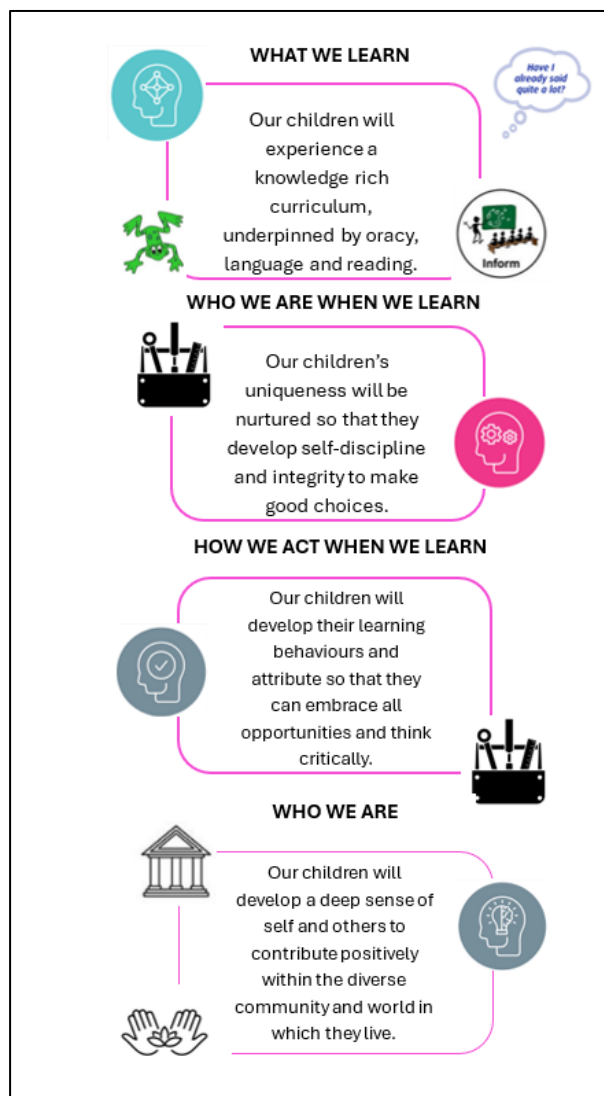


MARHAMCHURCH
CHURCH OF ENGLAND ACADEMY



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DESIGN and TECHNOLOGY Curriculum Overview



Our curriculum has been deliberately designed to be ambitious and meet the needs of our children as well as the National Curriculum expectations. Subjects have been planned to immerse the children within their familiar local context before expanding their knowledge nationally and across the world.

Our curriculum design is rooted in developing our pupils as learners under **4 key principles**:

- Developing learners' learning
- Developing learners' character
- Developing learning behaviour
- Developing learners' moral compass

Curriculum intent for Design and Technology:

As designers and constructors, our children will be empowered to be inquisitive, curious learners. Within the design technology curriculum they will become critical thinkers, partaking in analysis of the impact of Design Technology on everyday life and the wider world, where they will evaluate past and present innovative enterprise. Our children will research, plan, design, make and critique products that solve real and relevant problems within a variety of contexts considering their own needs and others' views, wants and values.

Substantive Knowledge

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS		<p>Structures</p> <p>Building homes: traditional Tales Learning to construct with a purpose, using a range of materials</p>		<p>Joining Techniques: tape, glue, holepunch</p>		<p>Food</p> <p>Making and decorating gingerbread biscuits. Use spoons, rollers, cutters and mixing skills.</p>
Year 1/2		<p>Textiles</p> <p>Templates and joining techniques</p> <p><i>Storytelling hand puppet</i></p>		<p>Mechanisms – sliders and levers</p> <p>Free standing Structures</p> <p><i>Moving Easter card/freestanding egg cup</i></p>		<p>Preparing fruit and vegetables</p> <p><i>Smoothies and sandwiches</i></p>
Year 3/4		<p>Mechanical systems</p> <p>Levers and linkages</p> <p><i>Science Book</i></p>		<p>Electrical systems</p> <p>Simple circuits and switches</p> <p><i>Torch</i></p>		<p>Food</p> <p>Health and varied diet</p> <p><i>Picnic</i></p>
Year 4/5		<p>Textiles</p> <p>2D shape to 3D shape</p> <p><i>Fabric Christmas decoration</i></p>		<p>Structures</p> <p>Frame structures</p> <p><i>Kite for Chinese New Year</i></p>		<p>Mechanical systems</p> <p>Pulleys or gears</p> <p><i>Moving toy car</i></p>
Year 5/6		<p>Textiles</p> <p>Combining different fabric shapes</p> <p><i>Pencil Case</i></p>		<p>Food</p> <p>Celebrating culture and seasonality</p> <p><i>Seasonal bread</i></p>		<p>Electrical systems</p> <p>More complex switches and circuits</p> <p><i>Electronic games</i></p>

Disciplinary Knowledge

Year	Explore	Skills	Plan	Make	Evaluate
	Making and decorating ginger biscuits for a tea party Key Vocabulary: Ingredients, fat, sugar, dairy, allergy, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble, design specification				
R 1 2	Why do people have ginger biscuits at parties? What do they taste like? What is the texture? Is the smell appealing? What are the main ingredients? Where do they come from? Are they locally sourced? What is the nutritional value of gingerbread? What were the results of your sensory testing of gingerbread products? What made the gingerbread more successful? Taste? Texture? Toppings? Which ingredient made it spicier? Did you like this?	Technical knowledge and understanding How do you ensure that your food workstation is hygienic and why is this important? How do you measure out ingredients accurately? Why is this important? What does it mean to knead the dough and when would you use this? What does it mean to beat/rub and mix the ingredients and why would you do this? Which ingredients can be changed/added to the basic recipe and why would you do this? Do you think the appearance matters when making gingerbread? Evaluation: How will your gingerbread meet the findings in your research for the consumer? Which baking skills do you need to use when making gingerbread for the texture? What might you add to the basic gingerbread recipe to make it to the liking of your party guests? How will you make the	Context: Making a gingerbread house for the special party Who will you make it for? What criteria will make it successful? What are the basic ingredients to your product and what will you chose to add? How will you finish it for appearances? What utensils will you need? What are your chosen ingredients and their quantities? Can you write your recipe to show the order of the steps to make your design?	Have you prepared a hygienic workstation? What utensils/ingredients do you need? How will you use them safely?	Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did your party guests enjoy their biscuits?

	appearance of your gingerbread appealing?			
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To design and create a storytelling hand puppet

Key vocabulary: names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function, prototype, gluing, stapling, safety pin, sewing, running stitch, glitter, crayon, shiny

Investigate and evaluate existing products linked to the chosen project. Explore and compare e.g. fabrics, joining techniques, finishing techniques and fastenings used. Use questions to develop children's knowledge How are 3D textile products made? How many parts is it made from? Can you draw the existing model design? What can it be joined with? How is it finished? Why do you think these joining techniques have been chosen? Can you label these on your drawing? Who might use it and why? What would make it successful?	Technical knowledge and understanding How do I create two identical shapes for a template? How do I join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling? What are the different finishing techniques I could use? e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. Evaluation: How easy was it to use? What are the potential problems?	Context: Making a storytelling puppet Who will you make it for? What parts will your product need to have and what will it be made from? What size will it be? How will it be joined and finished? Technical drawing: What is the size of your puppet? Have you drawn it to scale? What shape will it be? Will it have symmetry? What pattern will you choose? What are your stages for making? e.g does the whole puppet need to be assembled before the design/fastening? Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Create a prototype. Does it work?	What tools do you need? What materials do you need to prepare? What have you chosen to join your product? Does it meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?	Evaluate their ideas throughout and their final products against original design criteria. Did your design work for it's purpose? Why/Why not? Did it meet the requirement of the user? What did I find difficult? Why? Did I have to deviate from my plan? What did I change
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To design and create Moving Easter Cards:

Key Vocabulary: slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function , lever, pivot, slider, left, right, push, pull, up, down, forwards, backwards, in, out.

What do I know that has moving parts? What books do I know that have moving parts? Why do they have	Technical knowledge and understanding Label levers and sliders on a range of examples with their purpose: What is a lever? What	Context: Making a moving Christmas card Who will you make it for? What criteria will make it successful? What part	What tools/ materials do you need? How will you use the tools safely? What order will you need to make your	Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose?
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	<p>them? What part of the product moves? What materials are they made from?</p>	<p>is a slider? Who are they for? E.g the slider is used to show a snail appearing from behind the rock, the lever is used to show the butterfly moving to the flower. How does the slider move? How does the lever move? Which part of the mechanism is the pivot? What does a lever/slider remind you of? Which materials would be most suitable for a lever/slider? Why? Evaluation: Where did the levers/sliders work well? What could be the potential problems? What would be good to have for a Christmas card? What could hide behind the lever/slider?</p>	<p>will move? What will the part be showing? How will it be joined and finished? Technical drawing: Draw and label your design with the part that moves, lever, slider and part the is hidden or moved to. Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Why do you think it will it be something people would like to receive? Create a prototype. Does it work? Try using paper and card</p>	<p>mechanisms? Will you add finishings/decoration first or last? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>	<p>Why/Why not? Did you use a lever or a slider? What was its purpose? Did it move smoothly? What did I find difficult? Why? Did I have to change my plan? What did I change?</p>
<p>To design and create a fruit smoothie:</p> <p>Key vocab: 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, planning, investigating tasting, arranging, popular, design, evaluate, criteria</p>					
	<p>What are smoothies? What do Innocent Smoothies aim to do? Why do we drink them? What is the Eatwell plate? How many pieces of fruit/veg should we eat? What fruits are used to make smoothies? What do they taste like? What is the texture? What do they look like? What ingredients do smoothies have? What makes them different to juice?</p>	<p>Technical knowledge and understanding What do we need to do to prepare before touching foods? Why is following instructions important? How do we wash/peel/grate/slice/squeeze different fruits and vegetables? How do we keep ourselves and others safe when using utensils such as knives and graters? Do we eat the whole fruit/veg? Why? How do we turn the prepared fruit into a smoothie? Evaluation: What fruits taste good to me? What do I want to mix my smoothie with? Do I want my texture thick or thin? Why? How many fruits/veg do I want in my smoothie to make it healthy?</p>	<p>Context: Making a fruit smoothie Which fruits/veg will you choose to make a healthy smoothie for you to drink? What quantity will you need? How many fruits/ veg should we eat in a day? Will your chosen fruits/veg need peeling, grating, chopping or squeezing? What tools will you need? What will you add to your smoothie before blending? Technical drawing: Draw your smoothie with the fruits/veg you have chosen and label them with the quantity. What order will you need to prepare the fruit? What are the stages of making your smoothie? Write these out as</p>	<p>What ingredients do you need? What utensils will you need? How will you use the tools safely? Do you have your recipe for steps in the process? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of the Eatwell plate? What did I find difficult? Why? What would I change next time? Why?</p>

			<p>your recipe. Evaluation: Will it taste nice? Does it have enough fruit/veg for the Eatwell plate? What will be tricky? How will you overcome this? Create a prototype. Does it work?</p>		
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3/4

To design and create a balanced lunch for a picnic

Key Designer:

Key vocabulary: names 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, nutrition, carbohydrates, fats, sugars, E numbers

What are the contents in lunch boxes in your school? Over a week do they change much? Can you research and record your results? What selection of food do you find? What ingredients are used to make these? What food groups do they belong to? What substances are used in the foods e.g.? nutrients, fibre, water, E numbers, Carbohydrates, sugars? How do they match to the eat well plate? What do your results tell you about the balance of diet across lunch boxes? Trip to post-office to taste test some sandwiches: What did your taste test of sandwiches and wraps find? Texture, taste, appearance, nutrition

Can you create a technical drawing of these and label them with their content? How do the sensory characteristics affect your linking for food? What do customers look for? What are the best-selling sandwiches in these shops? Where do their ingredients come

What are the contents in lunch boxes in your school? Over a week do they change much? Can you research and record your results? What selection of food do you find? What ingredients are used to make these? What food groups do they belong to? What substances are used in the foods e.g.? nutrients, fibre, water, E numbers, Carbohydrates, sugars? How do they match to the eat well plate? What do your results tell you about the balance of diet across lunch boxes? Trip to post office/deli to taste test some sandwiches: What did your taste test of sandwiches and wraps find? Texture, taste, appearance, nutrition... Can you create a technical drawing of these and label them with their content? How do the sensory characteristics affect your linking for food? What do customers look for? What are the best selling sandwiches in these shops? Where do their ingredients come from? Grown, harvested, reared, caught etc Why is this important to customers? What does processed food mean?

Technical knowledge and understanding How do you prepare for cooking or handling food? Why is this important? How do you know how well a restaurant or café prepares food? Look at star ratings Why is following instructions important? What utensils are needed to make sandwiches/wraps? What is the bridge/claw technique and why would you use it? What techniques might you need to use? Grating, peeling, chopping, slicing, mixing, spreading, kneading, baking Evaluation: What recipe did you follow? Did it work? What skills did you need to use? What was difficult and how did you overcome? What do you need to remember for your own design?

Context: Designing and making a sandwich for a packed lunch box picnic Who will you make it for? What is its purpose? What design criteria will make it successful? Eg. Healthy, easy to eat, balanced, veggie/vegan How will you source and select ingredients? How will you make it appealing? What stages will you need to prepare and make your design? Hygiene, cutting, washing, spreading etc Technical drawing: What does your sketch show? Do your labels show how it

What utensils/ingredients do you need? What preparation will you need to hygiene? How will you use the utensils safely? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?

Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your food criteria? What did I find difficult? Why? Did I have to change my plan? What did I change? What would I change next time? Why?

	<p>from? Grown, harvested, reared, caught etc Why is this important to customers? What does processed food mean?</p> <p>Over a week do they change much?</p> <p>Can you research and record your results?</p> <p>What selection of food do you find?</p> <p>What ingredients are used to make these? What food groups do they belong to? What substances are used in the foods e.g.? nutrients, fibre, water, E numbers, Carbohydrates, sugars?</p> <p>How do they match to the eat well plate? What do your results tell you about the balance of diet across lunch boxes? Trip to post-office in village to taste test some sandwiches: What did your taste test of sandwiches and wraps find?</p> <p>Can you create a technical drawing of these and label them with their content? How do the sensory characteristics affect your linking for food?</p> <p>What do customers look for? What are the best selling sandwiches in</p>		<p>meets the criteria? What would the nutritional content be? Evaluation: Will it be suitable? Think appearance, texture, balance etc What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something people would like to eat? What do others think of your design? Where could you improve? Create a prototype on computer?. Does it work?</p>		
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	<p>these shops? Where do their ingredients come from? Grown, harvested, reared, caught etc</p> <p>Why is this important to customers? What does processed food mean?</p>				
<p>3/4</p>	<p>To design and create a moving Science book to show solids, liquid and gas and water cycle movement</p> <p>Key vocabulary: mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output, linear, rotary, oscillating, reciprocating, user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p>				
	<p>What books do you know that have lever and linkage mechanisms? Are there any other products that have these? E.g. bike brakes What is the purpose of lever and linkage mechanisms? Who might it be for? What do you think will move? How will you make it move? What part moved and how did it move? How do you think the mechanism works? What materials have been used? How effective do you think it is and why? What else could move?</p> <p>Are there any other products that have these? E.g. bike brakes What is the purpose of lever and linkage mechanisms?</p> <p>Who might it be for? What do you think will move? How will you make it move? What part moved and how did it move?</p> <p>How do you think the</p>	<p>What books do you know that have lever and linkage mechanisms? Are there any other products that have these? E.g. bike brakes What is the purpose of lever and linkage mechanisms? Who might it be for? What do you think will move? How will you make it move? What part moved and how did it move? How do you think the mechanism works? What materials have been used? How effective do you think it is and why? What else could move?</p>	<p>Technical knowledge and understanding How does a fixed pivot work? How does a loose pivot work? Why would you use a linear mechanism? Why would you use a reciprocating mechanism? Why would you use a rotary mechanism? Why would you use an oscillating mechanism? Which card strip is the lever? Which card strip is acting as the linkage? Which part of the system is the input and which part the output? What does the type of movement remind you of? Can you accurately measure, mark out, cut and join? Evaluation: Which mechanism is the most difficult? Why? Which is the simplest? When might you use them in your designs? Context: Making a moving Science book to show xxxx Who will you make it for? What does it need to show? What criteria will make it successful? What parts will your product need to have and what will it be made from? What size will it be?</p>	<p>What tools/ materials do you need? How will you measure accurately? What is the best way to mark out your product before cutting? How will you use the tools safely? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your moving science book criteria? What did I find difficult? Why? Did I have to change my plan? What did I change?</p>

	<p>mechanism works? What materials have been used? How effective do you think it is and why? What else could move?</p>		<p>How will it be joined and finished? Technical drawing: What will your final piece look like? Can you annotate the levers and mechanisms that you will use? Can you draw your design to scale? What will the main stages be for making your design? What materials will you need? Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will this show the reader? Create a prototype. Does it work?</p>		
<p>3/4</p>	<p>To design and create a torch for a reading for pleasure party Linked Designer: David Missel Key Vocabulary: series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, user, purpose, function, prototype, design criteria, innovative, appealing, design brief</p>				
	<p>What battery powered products can you name? Where and why they are used? How does the product work? What are its key features and components? How does the switch work?</p> <p>Is the product manually controlled or controlled by a computer? What materials have been used and why?</p> <p>How is it suited to its intended user and purpose? How do the switches work?</p> <p>Are they a push-to-make, push-to-break, toggle switch/ How might</p>	<p>Technical knowledge and understanding How do circuits work? Can you use a buzzer, bulb, switch and batteries? What are the output devices? How do you know? How do you find a fault in a circuit? Can you correct a fault? How do you use a simple control program with interface box to physically control output? How can you make a switch from simple classroom materials? e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. What ways do switches operate? How do you avoid short circuits?</p>	<p>Context: Making a torch for a reading for pleasure party Who will you make it for? What criteria will make it successful? What parts will your product need to have and what will it be made from? What size will it be? How will it be joined and finished? Technical drawing: What will your torch look like? Draw an annotated sketch. What do you need in your circuit to make a torch? Draw a cross section or exploded diagram How will it be operated? What switch will you choose to use in your circuit? Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something you can use? Create a prototype. Does it work? Does</p>	<p>What tools/ materials do you need? How will you use the tools safely? What are the main stages in making a torch? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your torch criteria? What did I find difficult? Why? Did I have to change my plan? What did I change? What would you change next time? Why?</p>

	different types of switches be useful in different types of products? What are the dangers of mains electricity?		anything need changing before you create it? Why?		
4/5	Fabric Christmas Decoration Linked Designer: Gisella Graham Key Vocabulary: 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, iron transfer paper design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype				
	<p>What are fabric decorations made of? How are they joined? What fabrics are they made from? What properties/characteristics does the fabric have? Why has this fabric been chosen? What fastenings could they have? How effective are its fastenings? How have textile products changed over time? E.g. Velcro, denim, zips etc What still remains? What can you see when a decoration is disassembled? What do you notice about the fabric/join? How has it been decorated? Does its decoration have a purpose? What would the 2-D pattern piece look like? What are its measurements? How might you change the product?</p>	<p>Technical knowledge and understanding What does the net look like for the decoration when disassembled? Can you create a paper pattern for the decorations you have looked at? What's the same/what's different? What are the optimum fabrics for a decoration? Pros/cons? What is a back stitch and why would you use it? What is a backwards stick and why would you use it? What is an over sew stitch and why would you use it? What is a blanket stitch and why would you use it? What is a running stitch and why would you use it? How might you finish your decoration? Will it need stuffing? Evaluation: Which joining technique makes the strongest seam? Why?</p> <p>Which stitch is appropriate for the purpose? Which joining techniques are suitable for the fabric and purpose? How can you stiffen your fabric? What is the purpose of the fastenings? Which one is most suited to the purpose and user? What decorative techniques have been used? What effect do they have?</p>	<p>Context: Making a fabric Christmas decoration Who will you make it for? What criteria will make it successful? What parts will your product need to have and what will it be made from? What size will it be? How will it be joined and finished? Will it need stuffing? Technical drawing: What designs have you sketched? Are they to scale? What material, net and fastening choices have you annotated on your sketched designs? Why have you chosen these? What does your storyboard of the main stages of making show for you chosen design? How have you chosen to finish your design? Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something people would like? Create a prototype. Do your paper pattern prototypes work? Is there anything that needs changing before you make it?</p>	<p>What tools/ materials do you need? How will you use the tools safely? How will you measure and mark out your pattern accurately? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your pencil criteria? What did I find difficult? Why? Did I have to change my plan? What did I change?</p>

4/5	Kite for Chinese New Year Key Designer: Chinese philosopher Mo-tse Kite inventor Key Vocabulary: frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent, design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional.				
	<p>What frame structures are there around us? e.g. tents, bus shelters, umbrellas What is the purpose of these structures? How are kites made? What frame structures do they have? Can you draw the frame structures and annotate the materials/joins used? How are they strengthened? How does the framework affect its strength? How are they constructed? What materials are they made from? How are they joined? How innovative is the design? How have the designs changed throughout history? Why is it important that they are sturdy?</p>	<p>Technical knowledge and understanding How can you join straws and make them stronger? How can you join sections of wood? How does adding diagonals to a square framework reinforce strength? How does triangulation add strength to a structure? How could this be used for a kite frame? How can you make paper tubes/paper straws and pipe cleaners and strengthen them for a frame? Which is stronger? Can you use these to make cubes, cuboids or pyramids? How can you effectively join framework materials together? Mount them onto card and annotate them. Evaluation: Which frame structure would work best for a kite? What materials will you choose? Which shape will you use? How will you reinforce it for strength? How will you finish it?</p>	<p>Context: Making a kite to fly Who will you make it for? What criteria will make it successful? What parts will your product need to have and what will it be made from? What size will it be? How will it be joined and finished? How will you strengthen the frame? Technical drawing: Can you draw your kite to scale? Can you annotate your chosen materials? How will you join this? Use a cross section sketch to show what it will look like? How will you finish your design? Evaluation: Will it be strong enough? Will the design be too heavy? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something people would like to play with or use? Create a prototype using paper/straws. Does it work?</p>	<p>What tools/ materials do you need? How will you use the tools safely? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your kite criteria? What did I find difficult? Why? Did I have to change my plan? What did I change?</p>
	Moving Toy Car Key Designer: Karl Friedrich Benz and Gottlieb Daimler car inventors Key Vocabulary: vocabulary pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output, design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief				
	<p>What products or toys have gear or pulley systems? Can you draw sketches of the products with the following annotations: How innovative is</p>	<p>Technical knowledge and understanding How can you use construction kits to combine two different size pulleys? How does it affect the direction? How does</p>	<p>Context: Making a moving toy Who will you make it for? What criteria will make it successful? What parts will your product need to have and what will it be</p>	<p>What tools/ materials do you need? How will you use the tools safely? Does what you have made meet your plan? Why/Why not? Have you had to change</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the</p>

	<p>the product? What design decisions have been made? What type of movement can be seen? What types of mechanical components are used and where are they positioned? What are the input, process and output of the system? How well does the product work? Why have the materials and components been chosen? How well has it been designed? How well has it been made? • Children could research and, if possible, visit engineering and manufacturing companies that are relevant to the product they are designing and making e.g. Jaguar Land Rover, JCB, local companies</p>	<p>it affect the speed of rotation? How many times does the smaller pulley turn each time the larger pulley turns once? Do the pulleys move in the same direction? How can you reverse the direction of rotation? What does your circuit need to work? a battery, a motor and a handmade switch, such as a reversing switch Evaluation: Using the construction kits, what worked well? Did your product move? What did you have to adapt/change?</p>	<p>made from? What size will it be? How will it be joined and finished? Technical drawing: Can you create a technical drawing of your product? What would the circuit look like? Can you use an exploded diagram with labels to show the components/input/output? Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something people would like to play with or use? Create a prototype. Does it work?</p>	<p>your design in any way whilst making it?</p>	<p>requirements of your moving toy criteria? What did I find difficult? Why? Did I have to change my plan? What did I change?</p>
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<p>5/6</p>	<p>Pencil Case: To design and create a pencil case Key Designer: Helix Pencil Cases Key Vocabulary: fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces</p>
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<p>What are pencil cases made of? How are they joined? What fabrics are they made from? What properties/characteristics does the fabric have? Why has this fabric been chosen? What fastenings could they have? How effective are its fastenings? How have textile products changed over time? E.g. Velcro, denim, zips etc What still remains? What can you see when a pencil case is dissembled? What do you notice about the fabric/join?</p>	<p>Technical knowledge and understanding What does the net look like for the pencil case when dissembled? Can you create a paper pattern for the pencil cases you have looked at? What's the same/what's different? What are the optimum fabrics for a pencil case? Pros/cons? What is a back stitch and why would you use it? What is a backwards stick and why would you use it? What is an over sew stitch and why would you use it? What is a blanket stitch and why would you use it? What</p>	<p>Context: Making a pencil case Who will you make it for? What criteria will make it successful? What parts will your product need to have and what will it be made from? What size will it be? How will it be joined and finished? Technical drawing: What designs have you sketched? Are they to scale? What material, net and fastening choices have you annotated on your sketched designs? Why have you chosen these? What does your storyboard of the main stages of making show for you chosen design? How have</p>	<p>What tools/ materials do you need? How will you use the tools safely? How will you measure and mark out your pattern accurately? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>		<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your pencil criteria? What did I find difficult? Why? Did I have to change my plan? What did I change?</p>
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	<p>How has it been decorated? Does its decoration have a purpose? What would the 2-D pattern piece look like? What are its measurements? How might you change the product?</p>	<p>is a running stitch and why would you use it? Evaluation: Which joining technique makes the strongest seam? Why? Which stitch is appropriate for the purpose? Which joining techniques are suitable for the fabric and purpose? How can you stiffen your fabric? What is the purpose of the fastenings? Which one is most suited to the purpose and user? What decorative techniques have been used? What effect do they have</p>	<p>you chosen to finish your design? Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something people would like to play with or use? Create a prototype. Do your paper pattern prototypes work?Is there anything that needs changing before you make it?</p>		
6	<p>Seasonal Bread To design and create some seasonal bread to share to celebrate religious festivals (Passover/Ramadan) Key Designer: Key Vocabulary: ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble ,design specification, innovative, research, evaluate, design brief</p>				
	<p>What do people look for when buying food products? Personal/cultural, healthy balanced diet, allergies, diet preferences, local/seasonal/organic produce? What will you research? Who will you ask? How will you record the information? What do your results tell you? Visit the local bakery. What do their customers want? What do they offer? Over a week do sales change much? What does this tell us about people's food habits? What ingredients are used to make their products? How are they sourced and why? Are the ingredients processed? What shapes do customer like? How would you know? What</p>	<p>Technical knowledge and understanding How do you measure out ingredients and why is it important? What is the purpose of kneading, beating, rubbing and mixing? Why are they different? What utensils are needed? What do you need to remember to keep yourself and other same using equipment? How will you prepare your workstation for hygiene? Evaluation of basic practice recipe: Did you manage to follow the practice recipe? What was difficult? How will you factor this into your final design? What ingredients could you change in the basic recipe for your own? Flour, seeds, spice, season, garlic, vegetables, taste, shape, appearance, smell</p>	<p>Context: Make seasonal bread to share and a religious feast Who will you make it for? What criteria will make it successful? What ingredients will your product need to have and where will they be sourced from? What additional options will you add to your design and why? What steps will you take to make your product? What equipment will you need? Technical drawing: What is your design specification? Does your design drawing meet the criteria? Why have you chosen your additional ingredients/shape/appearance? Can you label the nutritional content and choices? How will it link with the eat well plate? What skills will need to be used to make your design? E.g knead, mix, peel,</p>	<p>What utensils/ingredients do you need? How will you use them safely? How did you prepare your work station? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way whilst making it?</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your design brief? What did I find difficult? Why? Did I have to change my plan? What did I change? What would you adapt/change next time? How would this improve your product?</p>

	<p>substances are used in the foods e.g? nutrients, fibre, water, E numbers, Carbohydrates, sugars? How do they match to the eat well plate? What do your results tell you about the balance of diet across lunch boxes? Trip to Strawberry Fields? to test some produce: What ingredients can be added to foods? Herbs, spices, veg, cheese What do they add? Texture, smell, taste etc Where can they be sourced? What ingredients add spice, crunch, rise and crisp textures to the food? How does this affect the colour, taste and shape of the foods? E.g. seasonings, yeast, Are they seasonal/fair trade/ organic? How can you represent your data collected? What does it tell you? What key chefs promote seasonality, local produce and healthy eating? How do they do this and why do you think it is important?.</p>		<p>spread, beat, rub Evaluation: Will it work? Does it meet the design brief? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something people would like to play with or use? Create a prototype. Does it work?</p>		
<p>6</p>	<p>Electronic Games: to design an electronic game for year 3 Key Designer: https://www.amazon.co.uk/Buzzer-Steady-Childrens-Electronic-Family/dp/B00P2VYYK4/ref=sr_1_3?crd=1AVDIAXW8R23R&keywords=buzzer+steady+hand+games&qid=1681906768&srefix=buzzer+steady+hand+games%2Caps%2C65&sr=8-3 Key Vocabulary: series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose.</p>				
	<p>What electronic products react to changes in the environment? Where and why, they are used? How does the product work? What are its key features and components? How does a computer control programme</p>	<p>Technical knowledge and understanding How do circuits work? Can you use a buzzer, bulb, switch and batteries? What are the output devices? How do you know? How can you change the input devices? What</p>	<p>Context: Making an electronic circuit toy for Year 3 Who will you make it for? What criteria will make it successful? What parts will your product need to have and what will it be made from? What size will it be? How will it</p>	<p>What tools/ materials do you need? How will you use the tools safely? What are the main stages in making a torch? Does what you have made meet your plan? Why/Why not? Have you had to change your design in any way</p>	<p>Evaluate their ideas throughout and their final products against original design criteria. Did your design work for its purpose? Why/Why not? Did it meet the requirements of your product criteria? What did I find difficult?</p>

	<p>work? Is the product manually controlled or controlled by a computer? What is the input? What is the output? What are the dangers of mains electricity? Can you name a famous inventor related to electronics? project e.g. Thomas Edison – light bulb.</p>	<p>happens? E.g. light dependent resistors, push/pull switches/micro/reed switches How do you find a fault in a circuit? Can you correct a fault? How do you use a control program with interface box to physically control output? How can you create/block connections from simple classroom materials? e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips. How do you avoid short circuits</p>	<p>be joined and finished? Technical drawing: What will your product look like? Draw an annotated sketch. What do you need in your circuit to make your product? Draw a cross section or exploded diagram labelling the circuit and input/output How will it be operated? What switch will you choose to use in your circuit? Evaluation: Will it work? What will be tricky? How will you overcome this? Does it meet the purpose and user needs? Will it be something you can use? Create a prototype. Does it work? Does anything need changing before you create it? Why?</p>	<p>whilst making it?</p>	<p>Why? Did I have to change my plan? What did I change? What would you change next time? Why?</p>
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