

**Y3/ 4 Design and Technology Curriculum**  
**Medium Term Plan**

<b>Cycle A</b>				
<b>Topic</b>		<b>Lesson Focus</b>	<b>Key Knowledge</b>	<b>Vocabulary</b>
<b>Mechanical Systems- Levers and linkages</b>	1	Explore levers	To know that a lever is a stiff bar that does not bend. To know that applying force to one end of a lever has an effect on the other end.	<ul style="list-style-type: none"> <li>• Purpose</li> <li>• Design</li> <li>• Design criteria</li> <li>• Assemble</li> <li>• Linkage</li> <li>• Lever</li> <li>• Bar</li> <li>• Link</li> <li>• Pivot</li> <li>• Join</li> <li>• Mark out</li> <li>• Measure</li> <li>• Centimetres</li> <li>• System</li> <li>• Mechanical</li> <li>• Prototype</li> <li>• Annotated sketch</li> <li>• Mechanism</li> <li>• Slot</li> <li>• Bridge</li> <li>• Guide</li> <li>• Input</li> <li>• Process</li> <li>• Output</li> <li>• Linear</li> <li>• Rotary</li> <li>• Oscillating</li> <li>• reciprocating</li> </ul>
	2	Understand linkages	To know that a linkage is a system of bars or links joined together. To know that a pivot can join to links or bars together to make a linkage. To know that moving one component of a linkage can move the rest of the linkage.	
	3	Design and explore in real life	To know that a prototype is a first full-scale, and usually functional, form of a design. To know that an annotated sketch is a 2D sketch with notes or labels.  To know that designing something involves making choices to make something work.  To know that a design criteria is a list of attributes required of a finished product which enable it to meet the design brief  To know that technology has evolved to enable human lifestyles to become easier/ more functional	
	4	Make and test	To know that design choices need to be reasoned, justifying how it will make the final product work better To know that testing products shows us if they are fit for purpose (if they work) To know that a design brief is a starting point for a design which states the purpose a design/product	
	5	Evaluate	To know that design is a process which means it includes Investigation, Designing, Making, Evaluating and Improving products	
<b>Food</b>	1	Explore different food groups	To know that carbohydrates give our bodies energy To know that protein helps build muscle To know that dairy helps our bones and teeth To know that vegetables give us vitamins and minerals	<ul style="list-style-type: none"> <li>• Carbohydrates</li> <li>• Protein</li> <li>• Dairy</li> <li>• Vitamins</li> </ul>

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			To know that The Eatwell plate shows the balance needed in an ideal healthy diet.	<ul style="list-style-type: none"> <li>• Minerals</li> <li>• Purpose</li> <li>• Farming</li> <li>• Benefits</li> <li>• Grown</li> <li>• Caught</li> <li>• Reared</li> <li>• Home grown</li> <li>• Imported</li> <li>• Processed</li> <li>• Unprocessed</li> <li>• Cook</li> <li>• Heat</li> <li>• Temperature</li> <li>• Texture</li> <li>• Taste</li> <li>• Flavour</li> <li>• sweet</li> <li>• sour</li> <li>• hot</li> <li>• spicy</li> <li>• appearance</li> <li>• smell</li> <li>• preference</li> <li>• greasy</li> <li>• moist</li> <li>• cook</li> <li>• fresh</li> <li>• savoury</li> <li>• hygienic</li> <li>• edible</li> <li>• frozen</li> <li>• tinned</li> <li>• seasonal</li> <li>• harvested healthy/varied diet</li> </ul>
2	Discuss which foods are caught, reared and grown		To know that fruit, vegetables and grains are <b>grown</b> . To know that animals are <b>reared</b> for meat. To know that fish are <b>caught</b> from the sea.	
3	Discuss home-grown and imported food  Discuss processed and unprocessed food		To know that the food we eat can be from the UK and other countries. To know that home-grown food has been made in the UK To know food coming into the UK is known as imported.  To know that when food is reared it is raised on a farm for the purpose of selling as food To know that farms produce unprocessed food. To know that processed foods have been altered by humans and are not naturally occurring. To know that food can be cooked by heating	
4	Explore current sandwiches and wraps on the market		To know that design is a process which means it includes Investigation, Designing, Making, Evaluating and Improving products To know that testing products shows us if they are fit for purpose (if they work)	
5	Design and make a sandwich and wrap		To know that designing something involves making choices to make something work. To know that design choices need to be reasoned, justifying how it will make the final product work better To know that a design brief is a starting point for a design which states the purpose a design/product To know that a design criteria is a list of attributes required of a finished product which enable it to meet the design brief To know that technology has evolved to enable human lifestyles to become easier/ more functional	
6	Evaluate		To know that design is a process which means it includes Investigation, Designing, Making, Evaluating and Improving products	
<b>Textiles</b>	1	Explore fastenings  Test materials	<ul style="list-style-type: none"> <li>• To know that a fastening joins material together and can be opened and closed.</li> <li>• To know the names of at least 2 fastenings e.g. zip, button, popper, ribbon etc.</li>   <li>• To know that a materials have both functional and aesthetic qualities</li> </ul>	<ul style="list-style-type: none"> <li>• Fastening</li> <li>• Joining</li> <li>• Shaping</li> <li>• Cutting</li> <li>• Finishing</li> </ul>

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			<ul style="list-style-type: none"> <li>To know that a functional quality is something that helps a product do its job effectively</li> <li>To know that an aesthetic quality is something that make the product look appealing</li> <li>To know that materials can be combined and mixed to create more useful characteristics.</li> <li>To know that a single fabric shape can be used to make a 3D textiles product.</li> </ul>	<ul style="list-style-type: none"> <li>Appealing</li> <li>Aesthetic</li> <li>Seam</li> <li>Needle</li> <li>Thread</li> <li>Stitch</li> <li>Running stitch</li> <li>Back stitch</li> <li>Pattern piece</li> </ul>
2	Understand different types of stitch	<ul style="list-style-type: none"> <li>To know the names of at least two types of stitch (back stitch and running stitch)</li> <li>To know that a pattern piece is a template for part of a garment which can be traced onto material.</li> </ul>		
3	Design coin purse with fastening	<ul style="list-style-type: none"> <li>To know that designing something involves making choices to make something work.</li> <li>To know that design choices need to be reasoned, justifying how it will make the final product work better</li> </ul>		
4	Make coin purse with fastening	<ul style="list-style-type: none"> <li>To know that a design brief is a starting point for a design which states the purpose a design/product</li> <li>To know that a design criteria is a list of attributes required of a finished product which enable it to meet the design brief</li> <li>To know that technology has evolved to enable human lifestyles to become easier/ more functional</li> <li></li> </ul>		
5	Evaluate	<ul style="list-style-type: none"> <li>To know that design is a process which means it includes Investigation, Designing, Making, Evaluating and Improving products</li> <li>To know that testing products shows us if they are fit for purpose (if they work)</li> </ul>		

\*ongoing skill throughout year

<b>Cycle B</b>				
<b>Topic</b>		<b>Lesson Focus</b>	<b>Key Knowledge</b>	<b>Vocabulary</b>
<b>Food</b>	1	Cooking methods and food safety	To know the names of at least two methods of cooking such as boiling, frying, baking or roasting. To know that knives can cause cuts to the skin during cooking To know that germs can transfer from hands while cooking and that hands must be washed before preparing food. To know that an apron must be worn during cooking to protect clothes and prevent spread of germs from clothes to food. To know that there are safety hazards during the cooking process.	<ul style="list-style-type: none"> <li>Cook</li> <li>Boil</li> <li>Roast</li> <li>Bake</li> <li>Fry</li> <li>Chop</li> <li>Knife</li> <li>Utensil</li> </ul>

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			<p>To know that burning is a safety hazard during the cooking process</p> <p>To know that burns can be caused by touching the heat source, oil or boiling water splashes or touching hot food</p>	<ul style="list-style-type: none"> <li>● Slice</li> <li>● Peel</li> <li>● Grate</li> <li>● Mix</li> <li>● Knead</li> <li>● Hazard</li> <li>● Safety</li> <li>● Burn</li> <li>● hygiene</li> </ul>
2	Techniques	<p>To know that peeling means removing skin of a fruit or vegetable</p> <p>To know that slicing and chopping both involve cutting with a knife but produce different shaped pieces of food</p> <p>To know that slicing produces long thin slices of food</p> <p>To know that chopping produces smaller, usually square, pieces of food</p> <p>To know that grating means shredding food using a grater</p>		
3	Techniques	<p>To know that mixing means combining two or more ingredients</p> <p>To know that spreading means using a utensil to move spread across another piece of food</p> <p>To know that kneading means manipulating dough using hands</p> <p>To know that baking means cooking in the oven (and usually applies to breads and cakes rather than meat and vegetables)</p>		
4	Test current dips on the market Design own dip	<p>To know that designing something involves making choices to make something work.</p> <p>To know that design choices need to be reasoned, justifying how it will make the final product work better</p> <p>To know that a design brief is a starting point for a design which states the purpose a design/product</p> <p>To know that a design criteria is a list of attributes required of a finished product which enable it to meet the design brief</p>		
5	Make and evaluate dips	<p>To know that design is a process which means it includes Investigation, Designing, Making, Evaluating and Improving products</p> <p>To know that testing products shows us if they are fit for purpose (if they work)</p>		
<b>Electrical Systems</b>	1	<p>Components of a circuit</p> <p>Exploring switches</p> <p>Understand power sources</p>	<p>To know that a bulb is an electrical light source encased in glass</p> <p>To know that a buzzer is an electrical signalling device that makes a buzzing sound</p> <p>To know that a motor is a machine that produces motion or power</p> <p>To know that different components can be attached to a motor in order to enable movement within an electrical device</p> <p>To know that a switch is a device for making, breaking or changing the connections in an electrical circuit</p> <p>To know that in a <b>series circuit</b>, all components are connected end-to-end, forming a single path for current flow.</p> <p>To know that electricity comes from a power source e.g. battery</p>	<ul style="list-style-type: none"> <li>● Series circuit</li> <li>● Electrical system</li> <li>● Switches</li> <li>● Bulb</li> <li>● Buzzers</li> <li>● Motor</li> <li>● Program</li> <li>● Control</li> <li>● Fault</li> <li>● Connection</li> <li>● Battery</li> <li>● battery holder</li> <li>● bulb holder</li> <li>● Wire</li> <li>● insulator</li> </ul>

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	2	Connections and faults  Understand wires and crocodile clips	<p>To know that a resistor is a component of a circuit that takes some of the flowing electrical energy from the circuit</p> <p>To know that a fault in a circuit is something that is stopping the electricity flowing through the circuit.</p> <p>To know that connections in a circuit can link one component to another – most commonly through wires</p> <p>To know that wires are made with a metal core which conducts electricity</p> <p>To know that wires are covered in a plastic outer layer called an insulator – this does not conduct electricity so protects us from direct contact with live electricity</p> <p>To know that a crocodile clip can attach to another component to make a connection and that it must touch a metal part of that component.</p> <p>To know that a crocodile clip can be attached by opening the clip with two fingers and teeth must close on connecting metal component</p>	<ul style="list-style-type: none"> <li>• conductor</li> <li>• crocodile clip</li> <li>• system</li> <li>• input device</li> <li>• output device</li> </ul>
	3	Practice making a working circuit which includes a motor	<p>To know that a motor is a machine that produces motion or power</p> <p>To know that different components can be attached to a motor in order to enable movement within an electrical device</p> <p>To know that in a <b>series circuit</b>, all components are connected end-to-end, forming a single path for current flow.</p>	
	4	Design and make a motorised vehicle	<p>To know that designing something involves making choices to make something work.</p> <p>To know that design choices need to be reasoned, justifying how it will make the final product work better</p> <p>To know that a design brief is a starting point for a design which states the purpose a design/product</p> <p>To know that a design criteria is a list of attributes required of a finished product which enable it to meet the design brief</p>	
	5	Evaluate vehicle	<p>To know that design is a process which means it includes Investigation, Designing, Making, Evaluating and Improving products</p> <p>To know that testing products shows us if they are fit for purpose (if they work)</p>	
<b>Shell Structures</b>	1	Explore shell structures	<p>To know that a shell structure is a structure which is made with a 3D shaped shell e.g. tin can, milk carton etc.</p> <p>To know at least two examples of where shell structures can be found in everyday life.</p>	<ul style="list-style-type: none"> <li>• Shell structure</li> <li>• 2-D (two-dimensional) shape</li> <li>• Net</li> <li>• Computer-aided design</li> <li>• Cross-sectional diagram</li> <li>• three-dimensional (3-D) shape</li> <li>• cube</li> <li>• cuboid</li> <li>• prism</li> </ul>
	2	Understand 2D nets and investigate adhesives	<p>To know that 2D nets can be used to create a shell structure.</p> <p>To know that 2D nets contain faces of the final 3D shape/shell structure</p> <p>To know that 2D nets also include tabs which will be invisible when shell structure is built</p>	

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		Understand how 3D shapes can be used in design	<p>To know that tabs can be folded and secured with adhesive (glue) to secure shell structures which are made using nets</p> <p>To know that tabs are necessary for the joining process of making shell structures.</p> <p>To know that there are different types of adhesives available and that some are more or less suitable for purpose e.g. PVA glue, masking tape, sellotape, glue sticks, staples</p> <p>To know that using different 3D shapes in a design could make a finished shell structures more or less stiff/strong because of the qualities of the shape</p> <p>To know that a vertex is a corner of a 3-D shape (where corners of 2-D shapes within net join)</p>	<ul style="list-style-type: none"> <li>• vertex</li> <li>• edge</li> <li>• face</li> <li>• length</li> <li>• width</li> <li>• breadth</li> <li>• marking out</li> <li>• scoring</li> <li>• shaping</li> <li>• tabs</li> <li>• adhesives</li> <li>• joining</li> <li>• assemble</li> <li>• accuracy</li> <li>• material</li> <li>• stiff</li> <li>• strong</li> </ul>
3		Explore cross-sectional diagrams	<p>To know that a cross-sectional diagram shows a product cut in half to show what is inside.</p> <p>To know that cross sectional diagrams contain labels</p>	
4		Look at current shell structure playground equipment and design a piece of their own	<p>To know that designing something involves making choices to make something work.</p> <p>To know that design choices need to be reasoned, justifying how it will make the final product work better</p> <p>To know that a design brief is a starting point for a design which states the purpose a design/product</p> <p>To know that a design criteria is a list of attributes required of a finished product which enable it to meet the design brief</p>	
5		Explore CAD make templates	<p>To know that CAD can assist in the design process of a product with a shell structure by using computer programs to design/draw nets which can then be printed and built into 3D shell structures</p>	
6		Make playground equipment	<p>To know that designing something involves making choices to make something work.</p> <p>To know that design choices need to be reasoned, justifying how it will make the final product work better</p> <p>To know that a design brief is a starting point for a design which states the purpose a design/product</p> <p>To know that a design criteria is a list of attributes required of a finished product which enable it to meet the design brief</p>	
7		Evaluate playground equipment	<p>To know that design is a process which means it includes Investigation, Designing, Making, Evaluating and Improving products</p> <p>To know that testing products shows us if they are fit for purpose (if they work)</p>	

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