

Year 1					
	Autumn	Spring		Summer	
<b>Topic</b>	<b>Mechanisms – Wheels and Axles</b>	<b>Structures – Constructing a Windmill</b>		<b>Cooking and Nutrition - Smoothies</b>	
<b>Prior learning/ Links</b>	N/A	Structures – Junk Modelling (YR)		Cooking and Nutrition – Soup (YR)	
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>○ axle</li> <li>○ axle holder</li> <li>○ chassis</li> <li>○ diagram</li> <li>○ dowel</li> <li>○ equipment</li> <li>○ mechanism</li> <li>○ wheel</li> </ul>	<ul style="list-style-type: none"> <li>○ axle</li> <li>○ bridge</li> <li>○ design</li> <li>○ design criteria</li> <li>○ model</li> <li>○ net</li> <li>○ packaging</li> </ul>	<ul style="list-style-type: none"> <li>○ structure</li> <li>○ template</li> <li>○ unstable</li> <li>○ stable</li> <li>○ strong</li> <li>○ weak</li> </ul>	<ul style="list-style-type: none"> <li>○ blend</li> <li>○ chopping board</li> <li>○ flavour</li> <li>○ fork</li> <li>○ fruit</li> <li>○ healthy</li> <li>○ ingredients</li> <li>○ juicer</li> <li>○ recipe</li> </ul>	<ul style="list-style-type: none"> <li>○ root</li> <li>○ seed</li> <li>○ smoothie</li> <li>○ stem</li> <li>○ taste</li> <li>○ vegetable</li> <li>○ vine</li> </ul>
<b>End points</b>	<ul style="list-style-type: none"> <li>• Explain that wheels move because they are attached to an axle.</li> <li>• Recognise that wheels and axles are used in everyday life, not just in cars.</li> <li>• Identify and explain vehicle design flaws using the correct vocabulary.</li> <li>• Design a vehicle that includes functioning wheels, axles and axle holders.</li> <li>• Make a moving vehicle with working wheels and axles.</li> <li>• Explain what must be changed if there are any operational issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify some features that would appeal to the client (a mouse) and create a suitable design.</li> <li>• Explain how their design appeals to the mouse.</li> <li>• Make stable structures, which will eventually support the turbine, out of card, tape and glue.</li> <li>• Make functioning turbines and axles that are assembled into the main supporting structure.</li> <li>• Say what is good about their windmill and what they could do better.</li> </ul>		<ul style="list-style-type: none"> <li>• Describe fruits and vegetables and explain how to identify fruits.</li> <li>• Name a range of places that fruits and vegetables grow.</li> <li>• Describe basic characteristics of fruit and vegetables.</li> <li>• Prepare fruits and vegetables to make a smoothie.</li> </ul>	
<b>Enrichment ideas, suggestions (EDI)</b>	...	...		...	

<p><b>&amp; cross-curricular links</b></p>			
<p><b>Questions for assessment</b></p>	<ul style="list-style-type: none"> <li>• What items do you know that use wheels?</li> <li>• Where can we find wheels in our school? (You may want to go for a walk to see this.)</li> <li>• Why do we use wheels?</li> <li>• The vehicle should have round wheels that balance the body.</li> <li>• The wheels need to be attached to an axle.</li> <li>• The axle needs to fit inside an axle holder but not be attached to the axle holder.</li> <li>• Does your vehicle meet the design brief? Why? Why not?</li> </ul>	<ul style="list-style-type: none"> <li>• Why did you choose to decorate it in that way?</li> <li>• Why will the mouse like that design?</li> <li>• Does the windmill stand up on its own?</li> <li>• Is it well decorated for the mouse?</li> <li>• Does it have three parts?</li> <li>• Does the windmill turn in the wind?</li> </ul>	<ul style="list-style-type: none"> <li>• Can you identify the difference between the fruits and the non-fruits?</li> <li>• Why is it useful to cut up food? (To make it smaller.)</li> <li>• Why might you only want the juice from an orange? (Because the skin is tough and not very tasty.)</li> <li>• What was your favourite food or drink from the lesson?</li> <li>• Did you discover any interesting flavour combinations?</li> <li>• Does your smoothie look the way you expected it to?</li> <li>• Does your smoothie taste as you expected?</li> <li>• Can you taste or smell any of the individual ingredients?</li> <li>• How did you decide which ingredients to pick?</li> <li>• How did you prepare the ingredients?</li> <li>• Which was the favourite flavour?</li> <li>• How did you decide?</li> </ul>

Year 2						
	Autumn		Spring		Summer	
<b>Topic</b>	<b>Textiles - Pouches</b>		<b>Mechanisms – Making a Moving Monster</b>		<b>Cooking and Nutrition – Balanced Diet</b>	
<b>Prior learning/ Links</b>	Textiles – Bookmarks (YR)		Mechanisms - Wheels and Axles (Y1)		Cooking and Nutrition – Soup (YR) Cooking and Nutrition – Smoothies (Y1)	
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>○ decorate</li> <li>○ fabric</li> <li>○ fabric glue</li> <li>○ knot</li> <li>○ needle</li> <li>○ needle threader</li> </ul>	<ul style="list-style-type: none"> <li>○ running stitch</li> <li>○ sew</li> <li>○ template</li> <li>○ thread</li> </ul>	<ul style="list-style-type: none"> <li>○ axle</li> <li>○ design criteria</li> <li>○ input</li> <li>○ linkage</li> <li>○ mechanical</li> <li>○ output</li> <li>○ pivot</li> <li>○ wheel</li> </ul>	<ul style="list-style-type: none"> <li>○</li> </ul>	<ul style="list-style-type: none"> <li>○ appearance</li> <li>○ balanced</li> <li>○ carbohydrates</li> <li>○ dairy</li> <li>○ diet</li> <li>○ fruit</li> <li>○ grater</li> <li>○ ingredients</li> </ul>	<ul style="list-style-type: none"> <li>○ menu</li> <li>○ oils</li> <li>○ proteins</li> <li>○ smell</li> <li>○ spread</li> <li>○ taste</li> <li>○ vegetables</li> </ul>
<b>End points</b>	<ul style="list-style-type: none"> <li>• Sew a running stitch with regular-sized stitches and understand that both ends must be knotted.</li> <li>• Prepare and cut fabric to make a pouch from a template.</li> <li>• Use a running stitch to join the two pieces of fabric together.</li> <li>• Decorate their pouch using the materials provided.</li> </ul>		<ul style="list-style-type: none"> <li>• Identify the correct terms for levers, linkages and pivots.</li> <li>• Analyse popular toys with the correct terminology.</li> <li>• Create functional linkages that produce the desired input and output motions.</li> <li>• Design monsters suitable for children, which satisfy most of the design criteria.</li> <li>• Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design.</li> <li>• Select and assemble materials to create their planned monster features.</li> </ul>		<ul style="list-style-type: none"> <li>• Name the main food groups and identify foods that belong to each group.</li> <li>• Describe the taste, feel and smell of a given food.</li> <li>• Think of three different wrap ideas, considering flavour combinations.</li> <li>• Construct a wrap that meets the design brief and their plan.</li> </ul>	

		<ul style="list-style-type: none"> <li>Assemble the monster to their linkages without affecting their functionality.</li> </ul>	
<p><b>Enrichment ideas, suggestions (EDI) &amp; cross-curricular links</b></p>	<p>...</p>	<p>...</p>	<p>...</p>
<p><b>Questions for assessment</b></p>	<ul style="list-style-type: none"> <li>Can you spot the mistakes in the way I have done the stitch? What is this called?</li> <li>How do I thread it?</li> <li>What can I do if I have trouble?</li> <li>Which direction am I sewing in?</li> <li>What is the name of the stitch?</li> <li>What must I remember to do?</li> </ul>	<ul style="list-style-type: none"> <li>What is a mechanism?</li> <li>What is an input and an output?</li> <li>What is a lever?</li> <li>What is a linkage?</li> <li>What are levers and linkages used for?</li> <li>Can you identify a lever or a linkage?</li> <li>Can you name any products that use levers and linkages?</li> <li>What is a pivot?</li> <li>What are levers and linkages?</li> <li>What are pivots used for in linkages?</li> <li>What products use levers and linkages?</li> <li>What are design criteria?</li> <li>Why is it important to use design criteria?</li> <li>What materials can you use to make your monsters?</li> </ul>	<ul style="list-style-type: none"> <li>Can you sort the different foods into the different categories?</li> <li>Fruit and vegetables, Carbohydrates, Protein, Dairy and alternatives, Oils and spreads.</li> <li>Which food group is the pictured food in? (Jacket potato – carbohydrate.)</li> <li>Which food group are each of these options from? (Cheese, beans and lettuce have dairy, protein and fruit and vegetables; pasta and butter have carbohydrates and oils and spreads; roast potatoes have carbohydrates.)</li> <li>How did they hold the food in place to cut safely?</li> <li>Could the grater be dangerous?</li> <li>How did they spread the soft foods?</li> <li>What were the most popular ingredients and combinations on your table?</li> <li>Did anyone try anything new?</li> <li>How do you know which was your favourite combination? (Any with smiley faces next to them.)</li> <li>What was your favourite combination? (For example, my highest-rated was cucumber, hummus and cheddar cheese.)</li> </ul>

## DT Overview



			<ul style="list-style-type: none"><li>• What does the word 'appearance' mean? (How something looks.)</li><li>• Why is a food's appearance important?</li></ul>
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Year 3						
	Autumn		Spring		Summer	
<b>Topic</b>	<b>Mechanical Systems – Pneumatic Toys</b>		<b>Cooking and Nutrition – Eating Seasonally</b>		<b>Electrical Systems – Electric Poster</b>	
<b>Prior learning/ Links</b>	Mechanisms - Wheels and Axles (Y1) Mechanisms – Making a moving Monster (Y2)		Cooking and Nutrition – Soup (YR) Cooking and Nutrition – Smoothies (Y1) Cooking and Nutrition – Balanced Diet (Y2)		N/A	
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>○ mechanism</li> <li>○ lever</li> <li>○ pivot</li> <li>○ linkage system</li> <li>○ pneumatic system</li> <li>○ input</li> <li>○ output</li> </ul>	<ul style="list-style-type: none"> <li>○ component</li> <li>○ thumbnail sketch</li> <li>○ research</li> <li>○ adapt</li> <li>○ properties</li> <li>○ reinforce</li> <li>○ motion</li> <li>○</li> </ul>	<ul style="list-style-type: none"> <li>○ appearance</li> <li>○ arid</li> <li>○ climate</li> <li>○ complementary</li> <li>○ country</li> <li>○ export</li> <li>○ fruit</li> <li>○ grate</li> <li>○ import</li> <li>○ ingredients</li> <li>○ Mediterranean</li> </ul>	<ul style="list-style-type: none"> <li>○ mock-up</li> <li>○ mountain</li> <li>○ peel</li> <li>○ polar</li> <li>○ seasonal</li> <li>○ seasons</li> <li>○ taste</li> <li>○ temperate</li> <li>○ texture</li> <li>○ tropical</li> <li>○ vegetable</li> </ul>	<ul style="list-style-type: none"> <li>○ information design</li> <li>○ public</li> <li>○ bulb</li> <li>○ feedback</li> <li>○ develop</li> <li>○ final design</li> <li>○ electrical system</li> <li>○ electric product</li> </ul>	<ul style="list-style-type: none"> <li>○ circuit component</li> <li>○ bulb</li> <li>○ battery</li> <li>○ crocodile wires</li> </ul>
<b>End points</b>	<ul style="list-style-type: none"> <li>• Draw accurate diagrams with correct labels, arrows and explanations.</li> <li>• Correctly identify definitions for key terms.</li> <li>• Identify five appropriate design criteria.</li> <li>• Communicate two ideas using thumbnail sketches.</li> <li>• Communicate and develop one idea using an exploded diagram.</li> </ul>		<ul style="list-style-type: none"> <li>• Explain that fruits and vegetables grow in different countries based on their climates.</li> <li>• Understand that seasonal fruits and vegetables grow in a given season.</li> <li>• Understand that eating seasonal fruit and vegetables positively affects the environment.</li> <li>• Design a tart recipe using seasonal ingredients.</li> </ul>		<ul style="list-style-type: none"> <li>• Explain what ‘information design’ is and understand its impact, considering what could happen if we had no signage, posters, or written communication in public places of interest.</li> <li>• Research and choose a specific Ancient Roman topic on which to base their initial poster ideas.</li> <li>• Complete design criteria based on a client’s request.</li> </ul>	

# DT Overview

	<ul style="list-style-type: none"> <li>• Select appropriate equipment and materials to build a working pneumatic system.</li> <li>• Assemble their pneumatic system within the housing to create the desired motion.</li> <li>• Create a finished pneumatic toy that fulfills the design brief.</li> </ul>		<ul style="list-style-type: none"> <li>• Roughly sketch four initial poster ideas, indicating where a bulb will be located for each.</li> <li>• Review their initial ideas against the design criteria and peer feedback, developing a final design.</li> <li>• Assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration.</li> <li>• Acknowledge, with a brief explanation, the need to mount the poster using corrugated card.</li> <li>• Test that the simple circuit works by adding a battery.</li> <li>• Evaluate their electric posters in a letter to a client.</li> </ul>
<p><b>Enrichment ideas, suggestions (EDI) &amp; cross-curricular links</b></p>	<p>...</p>	<p>...</p>	<p>...</p>
<p><b>Questions for assessment</b></p>	<ul style="list-style-type: none"> <li>• Is electricity needed to make all machines work?</li> <li>• Does water have power?</li> <li>• What happens when the plunger is lifted on the syringe?</li> <li>• What do you think will happen to the first syringe when you push the plunger back in on the second one?</li> </ul>	<ul style="list-style-type: none"> <li>• What is the climate like where this food grows? (Polar; temperate; dry; tropical; Mediterranean.)</li> <li>• What foods do you eat in the spring and summer? (Light salads with tomato, lettuce or cucumber.)</li> <li>• What foods do you eat in the autumn and winter? (Roast dinners; soups with parsnips, pumpkins or potatoes.)</li> </ul>	<ul style="list-style-type: none"> <li>• What is information design?</li> <li>• Why is information design used?</li> <li>• Why is information design important?</li> <li>• Can you give examples of information design? (E.g. signage, posters, interactive displays.)</li> <li>• Can you share your initial ideas with the following:</li> </ul>

	<ul style="list-style-type: none"><li>• Do you think there is a connection between the sizes of the syringes and the distances they move?</li><li>• What is a pneumatic system?</li><li>• Can you remember the three different ways to create a pneumatic system?</li><li>• How can you use pneumatic systems with linkage systems to create motion?</li><li>• What products use pneumatic systems?</li><li>• How should you use scissors safely?</li><li>• How can you use pivots to create motion?</li><li>• What do we mean by 'housing'?</li><li>• What is a pneumatic system?</li><li>• How might you decide which materials to select for surface decoration?</li><li>• How could you assemble different parts?</li></ul>	<ul style="list-style-type: none"><li>• Have you ever picked fruit or vegetables? (Strawberries and raspberries in summer; apples, blackberries and pumpkins in autumn.)</li><li>• Which of the foods need to be peeled?</li><li>• Which are often better when cut up?</li><li>• Are there some that could be peeled or cut but do not have to be?</li><li>• What about the avocado?</li><li>• Would these ingredients work well together in a recipe?</li><li>• How might the ingredients have changed in the cooked tarts?</li><li>• What words can you use to describe the appearance of the tarts?</li></ul>	<ul style="list-style-type: none"><li>• a peer;</li><li>• the class;</li><li>• your teacher?</li><li>• Which initial idea is your favourite and why?</li><li>• Does your favourite idea meet your list of design criteria?</li><li>• What is the design cycle? (The stages you go through to develop a product.)</li><li>• What is the difference between an initial idea and the final design?</li><li>• How their electric poster meets the design criteria (Gus's needs).</li><li>• Explain what they like and would improve about their electric poster.</li></ul>
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Year 4				
	Autumn	Spring		Summer
Topic	Textiles - Fastenings	Digital World – Mindful Moments		Structures – Pavilions
Prior learning/ Links	Textiles – Bookmarks (YR) Textiles – Pouches (Y2)	N/A		Structures – Junk Modelling (YR) Structures – Constructing a Windmill (Y1)
Vocabulary	<ul style="list-style-type: none"> <li>○ Criteria</li> <li>○ Fabric</li> <li>○ Fastening</li> <li>○ Fix</li> <li>○ Mock-up</li> <li>○ Stitch</li> <li>○ Template</li> </ul>	<ul style="list-style-type: none"> <li>○ annotate</li> <li>○ assemble</li> <li>○ aesthetic</li> <li>○ block</li> <li>○ brand identity</li> <li>○ bug</li> <li>○ computer-aided design (CAD)</li> <li>○ clipart</li> <li>○ coding</li> <li>○ criteria</li> <li>○ debug</li> <li>○ develop</li> <li>○ ergonomic</li> <li>○ evaluate</li> <li>○ exhibition</li> </ul>	<ul style="list-style-type: none"> <li>○ form</li> <li>○ function</li> <li>○ join</li> <li>○ logo</li> <li>○ loop</li> <li>○ mindfulness</li> <li>○ model</li> <li>○ net</li> <li>○ program</li> <li>○ prototype</li> <li>○ research</li> <li>○ script</li> <li>○ sketchpad</li> <li>○ test</li> <li>○ timer</li> <li>○ user</li> <li>○ variable</li> </ul>	<ul style="list-style-type: none"> <li>○ 3D shapes</li> <li>○ Cladding</li> <li>○ Design criteria</li> <li>○ Innovative</li> <li>○ Natural</li> <li>○ Reinforce</li> <li>○ Structure</li> </ul>
End points	<ul style="list-style-type: none"> <li>• Identify the features, benefits and disadvantages of a range of fastening types.</li> <li>• Write design criteria and design a sleeve that satisfies the criteria.</li> <li>• Make a template for their book sleeve.</li> <li>• Assemble their case using any stitch they are comfortable with.</li> </ul>	<ul style="list-style-type: none"> <li>• State and/or describe the advantages and disadvantages of existing products (timers).</li> <li>• Understand how virtual micro:bit features could be used as part of a design idea.</li> <li>• Use research to inform design criteria.</li> <li>• Write a program that displays a timer on the virtual micro:bit based on their chosen seconds/minutes.</li> </ul>		<ul style="list-style-type: none"> <li>• Produce a range of free-standing frame structures of different shapes and sizes.</li> <li>• Design a pavilion that is strong, stable and aesthetically pleasing.</li> <li>• Select appropriate materials and construction techniques to create a stable, free-standing frame structure.</li> </ul>

		<ul style="list-style-type: none"> <li>• Suggest where the errors are, if testing is unsuccessful, by comparing the correct code to their own.</li> <li>• State key functions in the program editor (e.g. loops).</li> <li>• Evaluate the immediate appeal of the virtual micro:bit timer and how it might function.</li> <li>• Express which stages of the project they enjoyed or found more challenging.</li> <li>• Explain the need for a company to stand out against competition and/or state the importance of logos in business.</li> <li>• Recall and describe the name and use of key tools used in Sketchpad (CAD) software.</li> <li>• Fulfil the design requirements of the logo.</li> <li>• Evaluate the product using feedback from the user.</li> </ul>	<ul style="list-style-type: none"> <li>• Select appropriate materials and techniques to add cladding to their pavilion.</li> </ul>
<p><b>Enrichment ideas, suggestions (EDI) &amp; cross-curricular links</b></p>	<p>...</p>	<p>...</p>	<p>...</p>
<p><b>Questions for assessment</b></p>	<ul style="list-style-type: none"> <li>• Do you consider fastenings when you pick or purchase items?</li> <li>• When you last picked a jacket, did you look at how it did up? What about a bag? Lunchbox? Purse or wallet?</li> </ul>	<ul style="list-style-type: none"> <li>• What colours might be suitable?</li> <li>• What could the timer display look like?</li> <li>• How long should the timer be set for?</li> <li>• What design do you think a teacher would like?</li> <li>• How long did you choose for your mindful moment? Why?</li> <li>• What went well?</li> </ul>	<ul style="list-style-type: none"> <li>• What is a World Expo?</li> <li>• What is a pavilion for?</li> <li>• Can you name a famous pavilion in France? (Eiffel Tower.)</li> <li>• What is a frame structure?</li> <li>• What might a well-made structure might look like? (Neat, strong joints and accurate angles.)</li> </ul>



	<ul style="list-style-type: none"><li>• Do you just look at the functionality of a fastening (how useful it is)?</li><li>• Have you ever purchased something with a poor fastening because you liked the way it looked?</li><li>• Are fastenings fashionable?</li><li>• Who is this for?</li><li>• What do you know about them?</li><li>• What do they like?</li><li>• What will they use this for?</li><li>• What will they value more: aesthetics or practicality?</li><li>• Why is it useful to have a list of design criteria?</li><li>• What will you assemble first?</li><li>• What needs to be attached to what?</li><li>• What will be the best way to attach each part?</li><li>• What must you consider when sewing?</li></ul>	<ul style="list-style-type: none"><li>• Did you have to change anything from your initial sketch? Why?</li><li>• Does your prototype match what you put on your design criteria?</li><li>• What material will this be made of in a final product?</li><li>• What did you find challenging?</li><li>• How do people know it is a mindfulness company? (The colour choices, the theme, the company name.)</li><li>• How did you choose your company name? (Various answers – they should refer to how they made their decisions, perhaps based on a theme they liked or considering how to make the product purpose clear.)</li><li>• Which Sketchpad tools did you use?</li></ul>	<ul style="list-style-type: none"><li>• Why might corner triangles be an excellent idea to use in your structure?</li><li>• How will you know if your structure is successful?</li><li>• How will I attach the cladding?</li><li>• How long will it take to attach?</li><li>• How will the weight of the cladding affect my structure?</li></ul>
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Year 5						
	Autumn		Spring		Summer	
<b>Topic</b>	<b>Cooking and Nutrition – Developing a Recipe</b>		<b>Textiles – Stuffed Toys</b>		<b>Electrical Systems - Doodlers</b>	
<b>Prior learning/ Links</b>	Cooking and Nutrition – Soup (YR) Cooking and Nutrition – Smoothies (Y1) Cooking and Nutrition – Balanced Diet (Y2) Cooking and Nutrition – Eating Seasonally (Y4)		Textiles – Bookmarks (YR) Textiles – Pouches (Y2) Textiles – Fastenings (Y4)		Electrical Systems – Electric Poster (Y3)	
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>○ abattoir</li> <li>○ adaptation</li> <li>○ cross-contamination</li> <li>○ enhance</li> <li>○ hygiene</li> <li>○ ingredients</li> </ul>	<ul style="list-style-type: none"> <li>○ nutrient</li> <li>○ nutritional value</li> <li>○ preference</li> <li>○ process</li> <li>○ recipe</li> <li>○ safety</li> <li>○ theme</li> </ul>	<ul style="list-style-type: none"> <li>○ accurate</li> <li>○ annotate</li> <li>○ appendage</li> <li>○ blanket-stitch</li> <li>○ design criteria</li> <li>○ detail</li> <li>○ evaluation</li> </ul>	<ul style="list-style-type: none"> <li>○ fabric</li> <li>○ sew</li> <li>○ shape</li> <li>○ stuffed toy</li> <li>○ stuffing</li> <li>○ template</li> </ul>	<ul style="list-style-type: none"> <li>○ circuit component</li> <li>○ configuration</li> <li>○ current</li> <li>○ develop</li> <li>○ DIY</li> <li>○ investigate</li> <li>○ motor</li> </ul>	<ul style="list-style-type: none"> <li>○ motorised</li> <li>○ problem solve</li> <li>○ product analysis</li> <li>○ series circuit</li> <li>○ stable</li> <li>○ target user</li> </ul>
<b>End points</b>	<ul style="list-style-type: none"> <li>• Describe the process of beef production.</li> <li>• Research a traditional recipe and make changes to it.</li> <li>• Add nutritional value to a recipe by selecting ingredients.</li> <li>• Prepare and cook a version of bolognese sauce.</li> </ul>		<ul style="list-style-type: none"> <li>• Design a stuffed toy, considering the main component shapes of their toy.</li> <li>• Create an appropriate template for their stuffed toy.</li> <li>• Join two pieces of fabric using a blanket stitch.</li> <li>• Neatly cut out their fabric.</li> <li>• Use appliqué or decorative stitching to decorate the front of their stuffed toy.</li> </ul>		<ul style="list-style-type: none"> <li>• Identify simple circuit components (battery, bulb and switch) with a basic explanation of their function.</li> <li>• Explain that a series circuit is assembled in a loop to allow the electricity to flow along one path.</li> <li>• Describe a motor as a circuit component that changes electrical energy into movement.</li> <li>• Provide examples of motorised products that use movement to rotate or spin different parts.</li> </ul>	

		<ul style="list-style-type: none"><li>• Use blanket stitch to assemble their stuffed toy, repairing when needed.</li><li>• Identify what worked well and areas for improvement.</li></ul>	<ul style="list-style-type: none"><li>• Remove and replace different parts of a Doodler, as part of a team.</li><li>• Suggest ways to switch the configuration to amend the form or function of the Doodler.</li><li>• Explain, in an investigation report, each of the changes they made and the effect this had on the Doodler's ability to draw scribbles (function) and appearance (form).</li><li>• Develop design criteria with consideration for the target user, the purpose of their Doodler, a key function and the Doodler's form and final appearance (e.g. fun, bright, soft).</li><li>• Explain simply why their Doodler has a certain configuration based on the findings of their investigation (e.g. I used four pens because the Doodler would fall over with two).</li><li>• Create a functional Doodler that creates scribbles on paper with or without a switch.</li><li>• Identify and list each of the required materials, tools and circuit components required to build a Doodler.</li><li>• Explain simply the steps to assemble a Doodler as part of a set of instructions (or storyboard).</li><li>• Write instructions to build a functional circuit, explaining how to identify if it is functional or not.</li><li>• Provide suggestions to improve a peer's set of instructions after testing</li></ul>
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			how effective they are at guiding someone.
<b>Enrichment ideas, suggestions (EDI) &amp; cross-curricular links</b>	...	...	...
<b>Questions for assessment</b>	<ul style="list-style-type: none"> <li>• Where are cattle raised?</li> <li>• How long does the farmer raise them for?</li> <li>• How do we know the animals are properly cared for?</li> <li>• Why are the cattle tagged?</li> <li>• How does the farmer look after the cows?</li> <li>• Where do the cattle go to be turned into meat?</li> <li>• Is the meat turned straight into beef products?</li> <li>• What ingredients are different in the recipes?</li> <li>• What ingredients are often the same?</li> <li>• What does red on a nutritional label show?</li> <li>• Why is it important to understand nutritional information?</li> <li>• Which of the vegetables are crunchy and hard?</li> <li>• What will cooking the vegetables do to them?</li> <li>• Why do we soften these vegetables before adding the tomatoes?</li> </ul>	<ul style="list-style-type: none"> <li>• Which previously learnt skills may be useful in this project and for what parts of your design?</li> <li>• Check their own and their partner's work for loose threads or poor stitching.</li> <li>• What would happen over time if these were left?</li> <li>• What can they do to avoid this?</li> <li>• Which parts of creating your stuffed toy did you find difficult or easy?</li> <li>• How similar is your final product to your design?</li> <li>• How neat is your stitching, and does it hold the stuffing?</li> <li>• How happy are you with your finished toy?</li> <li>• How would you improve your toy?</li> </ul>	<ul style="list-style-type: none"> <li>• Can you give an example of a product that uses a motor? (A fan; a remote control car; a food mixer.)</li> <li>• What is the purpose of the example product?</li> <li>• How does the example product use the motor to function? (Creates movement; spins a part of the product etc.)</li> <li>• Explain a change you made as a team to the Doodler that improved it.</li> <li>• Explain a change you made as a team to the Doodler that caused it a problem (e.g. it may have become unstable with fewer pens).</li> <li>• If the Doodler had ... (suggest an amendment to the Doodler and see what the children predict based on what they have learnt through their investigation; for example, 'two pens to stand up on' or 'the motor on the side').</li> <li>• Why did you configure your Doodler with (specify an element, e.g., angle of pens)?</li> <li>• Did you come across any problems when testing configurations for your Doodler? How did you fix them?</li> </ul>

## DT Overview



	<ul style="list-style-type: none"><li>• Why is it important to prevent bacteria from spreading when cooking?</li></ul>		<ul style="list-style-type: none"><li>• What do you like about your Doodler design? Why?</li><li>• What is the purpose of the motor in the Doodler? (To shake and spin the Doodler on the drawing tools.)</li><li>• What is the purpose of the Doodler? (To generate scribbles using an electrical product.)</li><li>• Is your Doodler design fit for purpose (does it function as it should)? Why?</li><li>• Is there anything you could change about your Doodler design? What and why?</li><li>• What did you learn by writing instructions for someone else to assemble your Doodler?</li></ul>
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Year 6						
	Autumn		Spring		Summer	
<b>Topic</b>	<b>Digital World – Navigating the World</b>		<b>Structures - Playgrounds</b>		<b>Mechanical Systems – Automata Toys</b>	
<b>Prior learning/ Links</b>	Digital World – Mindful Moments (Y4)		Structures – Junk Modelling (YR) Structures – Constructing a Windmill (Y1) Structures – Pavilions (Y4)		Mechanisms - Wheels and Axles (Y1) Mechanisms – Making a moving Monster (Y2) Mechanical Systems – Pneumatic Toys (Y3)	
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>○ navigation</li> <li>○ cardinal compass</li> <li>○ application (apps)</li> <li>○ pedometer</li> <li>○ GPS tracker</li> <li>○ client</li> <li>○ function</li> <li>○ duplicate</li> <li>○ replica</li> <li>○ loop</li> <li>○ variable</li> <li>○ value</li> </ul>	<ul style="list-style-type: none"> <li>○ if statement</li> <li>○ boolean</li> <li>○ corrode</li> <li>○ mouldable</li> <li>○ lightweight</li> <li>○ environmentally friendly</li> <li>○ biodegradable</li> <li>○ recyclable</li> <li>○ product lifecycle</li> <li>○ product lifespan</li> </ul>	<ul style="list-style-type: none"> <li>○ apparatus</li> <li>○ design criteria</li> <li>○ equipment</li> <li>○ playground</li> <li>○ landscape features</li> <li>○ cladding</li> </ul>	<ul style="list-style-type: none"> <li>○</li> </ul>	<ul style="list-style-type: none"> <li>○ accurate</li> <li>○ assembly-diagram</li> <li>○ automata</li> <li>○ axle</li> <li>○ bench hook</li> <li>○ cam</li> <li>○ clamp</li> <li>○ component</li> <li>○ cutting list</li> <li>○ diagram</li> <li>○ dowel</li> <li>○ drill bits</li> <li>○ exploded-diagram</li> <li>○ finish</li> <li>○ follower</li> </ul>	<ul style="list-style-type: none"> <li>○ frame</li> <li>○ function</li> <li>○ hand drill</li> <li>○ jelutong</li> <li>○ linkage</li> <li>○ mark out</li> <li>○ measure</li> <li>○ mechanism</li> <li>○ model</li> <li>○ research</li> <li>○ right-angle</li> <li>○ set square</li> <li>○ tenon saw</li> </ul>
<b>End points</b>	<ul style="list-style-type: none"> <li>• Incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief.</li> <li>• Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen.</li> </ul>		<ul style="list-style-type: none"> <li>• Create five apparatus designs, applying the design criteria to their work.</li> <li>• Make suitable changes to their work after peer evaluation.</li> </ul>		<ul style="list-style-type: none"> <li>• Mark, saw and cut out the components and supports of their toy with a varying degree of accuracy to the intended measurements.</li> <li>• Follow health and safety rules, taking care with the equipment.</li> </ul>	

# DT Overview

	<ul style="list-style-type: none"> <li>• Identify errors (bugs) in the code and suggest ways to fix (debug) them.</li> <li>• Self and peer evaluate a product concept against a list of design criteria with basic statements.</li> <li>• Identify key industries that use 3D CAD modelling and why.</li> <li>• Recall and describe the name and use of key tools used in Tinkercad (CAD) software.</li> <li>• Combine more than one object to develop a finished 3D CAD model in Tinkercad.</li> <li>• Complete a product pitch plan that includes key information.</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Make roughly three different structures from their plans using the materials available.</li> <li>• Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas.</li> <li>• Secure their apparatus to a base.</li> <li>• Make a range of landscape features using a variety of materials which will enhance their apparatus.</li> </ul>	<ul style="list-style-type: none"> <li>• Attempt a partial assembly of their toys using an exploded-diagram, following a teacher’s demonstration.</li> <li>• Develop a design idea with some descriptive notes.</li> <li>• Explore different cam profiles and choose three for their follower toppers with an explanation of their choices.</li> <li>• Create neat, decorated follower toppers with some accuracy.</li> <li>• Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata.</li> <li>• Decorate and finish the automata to meet the design criteria and brief.</li> <li>• Evaluate their finished product, making descriptive and reflective points on function and form.</li> </ul>
<p><b>Enrichment ideas, suggestions (EDI) &amp; cross-curricular links</b></p>	<p>...</p>	<p>...</p>	<p>...</p>
<p><b>Questions for assessment</b></p>	<ul style="list-style-type: none"> <li>• What is Aria asking for? (A multifunctional electronic compact device.)</li> <li>• Why has Aria suggested this as a new product?</li> <li>• How does your program meet the design brief and client’s request?</li> <li>• Can you name and explain a ‘_____’ block? (Provide an example)</li> </ul>	<ul style="list-style-type: none"> <li>• Consider the design criteria and examine partner’s work. Identify both what went well and what could be improved.</li> <li>• Where are you going to add cladding to your structures? Why?</li> <li>• Which materials are you going to use? Why?</li> </ul>	<ul style="list-style-type: none"> <li>• What is a list of design criteria? (Points that outline what we need to do for the product to be successful.)</li> <li>• How does a design brief help us? (The problem or job that the design needs to fulfil.)</li> <li>• What challenges could you come across working in pairs? (Communication and agreement.)</li> </ul>

	<p>of a particular input, logic, basic or music block.)</p> <ul style="list-style-type: none"> <li>• Can you name the key functions in your program?</li> <li>• What do you think about the unsustainable product lifespan?</li> <li>• What do we mean by 'non-recyclable', 'finite' and 'unsustainable'? (These are all keywords for materials that are limited in supply, cannot be remade into other products and therefore will eventually run out but be left in landfill or polluting the ocean.)</li> <li>• How could you change your habits to help the planet? (The 'six Rs' of sustainability, making sustainable material choices.)</li> <li>• Does your product concept meet all of the design criteria?</li> <li>• What could be improved about your product concept?</li> <li>• Which materials did you choose and why?</li> <li>• What is a product pitch and its purpose?</li> <li>• What key information should be included in a product pitch?</li> <li>• How did you feel when giving your product pitch?</li> <li>• Do you think you could have included more information in your answers? If so, why?</li> <li>• What are you most proud of from this project?</li> <li>• Were there any pitches in the class that you particularly enjoyed? If so, why?</li> </ul>	<ul style="list-style-type: none"> <li>• Which tools will you use to cut/shape/join the materials?</li> <li>• Why is it important to consider landscape design for outdoor spaces? (It is important to carefully think about how a landscape design will work around a structure because once built, it is usually a very long-term building and can stand for hundreds of years. If the structure does not look natural or fit with the surrounding area, it can make it look unappealing.)</li> <li>• What positive or negative impact can it have on users?</li> <li>• Can you think of landscape features you like or do not like? Why?</li> </ul>	<ul style="list-style-type: none"> <li>• How will you overcome these challenges? (Discussing and making decisions as a team.)</li> <li>• Can you define the word 'accurate'? (Neat and correct to the intended measurements.)</li> <li>• Why do the automata frame components need to be accurate? (For all parts to operate as a mechanism, they must fit well together.) Can you share a health and safety rule for using a tool? (Specify tools such as a tenon saw, hand drill, bench hook, sand or glass paper and scissors.)</li> <li>• Why is it important to share your experience with others?</li> <li>• What is a temporary fix? How is it useful?</li> <li>• What is a design idea?</li> <li>• What is a list of design criteria?</li> <li>• When assembling the automata, what difficulties did you come across?</li> <li>• How did you resolve these difficulties?</li> <li>• Could the design idea on slide 2 use different images and still fulfil the corresponding list of design criteria?</li> <li>• What do you like or dislike about your design idea? Why?</li> <li>• How could it be improved?</li> <li>• Why did you choose this particular design idea?</li> <li>• Which parts of your chosen design will be the most complex? Why?</li> <li>• Can you think of a toy or product with inner workings (electronics, mechanisms, springs, magnets)? What went well with the follower topper designs?</li> </ul>
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# DT Overview



			<ul style="list-style-type: none"><li>• What could be improved? Why?</li><li>• How do your follower toppers fit into your design idea, theme and criteria?</li><li>• How does your automata meet the design criteria points?</li><li>• Does your automata meet the requirements in the design brief? Why?</li><li>• Can you suggest how the automata could be used as a shop display window?</li></ul>
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