



Design and Technology

Lower Key Stage 2 (Y3 and Y4) Long Term Plan

	Year 3			Year 4		
Themes (Number of weeks/Term)	Autumn 2 Create a Christmas-themed moving toy (POAP) (6 weeks)	Spring 2 Reading light (POAP) (5 weeks)	Summer 2 Sandwich box (POAP) (5 weeks)	Spring 1 Make a Viking moving oar (5 weeks)	Spring 2 Money Containers Textiles POAP (6 weeks)	Summer 1 Biscuits (5 weeks)
NC Content/Coverage	Mechanical systems: Pneumatics	Electrical systems. Simple circuits and switches	Shell Structures	Lever mechanisms	Joining two materials – using blanket stitch.	Prepare and cook healthier biscuits using a range of techniques
Substantive Knowledge/skills	Technical Knowledge I can understand and use pneumatic mechanisms such balloons or syringes I can use and understand the following vocab – Pneumatics systems, compressed, mechanism, inflate and deflate, prototype	Technical knowledge I can describe what a circuit is and how to create one I can understand what switches and blubs are and how to connect them in a circuit I know which electrical systems to use in my products I can explain how a ‘push to make’ switch works I can explain what a ‘push to make latch’ switch is I can explain the pros and cons of different switch types in relation to my design	Technical knowledge I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures I can describe different shell structures I understand and can explain the purposes of different shell structures	Technical knowledge I can describe what a lever mechanism is. I understand and can explain how lever mechanisms work I can use and understand the following vocab – mechanism (recap from year 3), out and input (link to computing), lever, Oscillating, Linear.	Technical knowledge I know how to strengthen and reinforce a textile structure through my choice of stitches, fabrics and threads I can apply this knowledge to create a Viking-style purse	Technical knowledge I understand and apply the principles of a healthy and varied diet. I know how to make biscuits healthier by choosing my ingredients carefully (including consideration of allergies). I can explain how my choice of ingredients will affect the final product’s structure, nutrition and appearance. I can safely use a range of techniques to prepare and cook a biscuit mixture.
Disciplinary Knowledge/Skills	Research I can explore different moving toys and explain how they work. I can investigate, analyse and evaluate familiar objects that use air to make them work	Research I can discuss and investigate different examples of relevant battery-powered products I can name some battery powered items in the home	Focus Task I can explore and compare different box designs, explaining which one is strongest Design I can design a sandwich box that will hold food safely.	Focus task I can explore different lever mechanisms and explain how they work. Design I can design a Viking ship oar that can move using a lever.	Focus task I can explore different textile containers and explain what makes them strong and useful. I can recall some different fabrics, stitches and threads and their uses.	Focus task I can explore different biscuit recipes and explain what makes them tasty and healthy. Design I can design my own biscuit recipe considering flavour, texture,



	I can list some of the benefits of using air to move objects Focus task I can practise using two pneumatics I can draw both systems Designing I can create a design brief using annotated sketches and prototypes I can explain the purpose of my design. I can draw and label my design to show how it will move. I can plan what materials and tools I will need. Making I can measure, cut, and join materials safely and carefully. I can make a simple pneumatic system to create movement. I can assemble a high-quality product using the knowledge, understanding and skills I have learnt I can recall the main steps in making a pneumatic toy I can make changes and improvements while I work. Evaluation I can test my toy and what works well.	Focus Task I can explore different lights and explain what makes them work well. Design I can design a simple reading light that has a purpose and user in mind. I can draw and label my design to show how the circuit and switch will work. I can plan what materials and components (wires, bubs, batteries) I will need). Making I can make a simple circuit that lights a bulb. I can use a switch to control my light. I can assemble my light safely and it works as planned. I can find and fix simple problems in my circuit. Evaluating. I can test my light and say what works well. I can say what I would improve next time. I can explain how my light works using simple circuit terms.	I can draw and label my design to show the shape, folds and joins. I can plan what materials use and why). Making I can measure, cut, fold and join materials carefully to make my box. I can join parts securely so my box holds its shape. I can make improvements while I work to make the box better. Evaluating. I can test my box and say what works well. I can say what I want to improve next time. I can explain how my finished box matches my design.	I can draw and label my design showing how the lever and oar will move. I can plan which materials and tools I will use and why. Making I can measure, cut, and join materials to make a working lever for my oar. I can assemble my oar and lever so it moves as planned. I can test and adjust my lever to ensure the oar moves correctly. Evaluating I can test my lever and explain what works well. I can identify changes I would make to improve the lever or oar. I can explain how my finished lever matches my design plan.	Design I can design a money container that meets a user's needs. I can draw and label my design to show the shape, opening, and stitching plan. I can plan which fabrics, threads, and tools I will use and explain why. Making I can cut fabric carefully and use a blanket stitch to join materials. I can use a running stitch and blanket stitch to assemble my container. I can use a needle and thread safely and independently. I can check my stitching and make improvements as I work. Evaluating I can test my container and say what works well. I can identify improvements to make the container stronger or neater. I can explain how my finished container matches my design plan.	appearance and health considerations. I can draw and label my recipe plan showing ingredients, method, and decoration. I can plan which ingredients and tools I will use and why. Making I can measure, mix, shape, and bake biscuits safely and correctly. I can measure ingredients accurately for my recipe. I can shape biscuits neatly and bake them to the correct texture and colour. I can check my biscuits and make improvements as I work. Evaluating I can test my biscuits and say what works well and what could be improved. I can suggest improvements to recipe or technique. I can explain how my biscuits match my design plan.
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	I can say what I would improve next time. I can explain how my finished toy matches my design					
Key vocabulary	Mechanism Compressed Inflate Prototype	Circuit Switch Battery (cell) Wires Bulb	Structure Stiffen reinforce	Lever Pivot Oscillating Linear	Blanket stitch Thread Textile Running stitch Reinforce	Balanced diet Texture Nutrition Substitute