

Design Technology Long Term Planning

'Achieve Excellence'





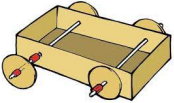
At William Stockton, to 'get better at 'Design and Technology' will mean that children learn to think creatively to solve problems and develop a natural curiosity alongside extending their understanding and skills base. We encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts



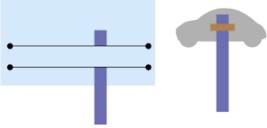
Substantive - I know that



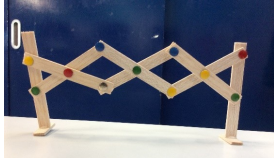
Disciplinary - I know how




	Autumn	Spring	Summer
Nursery	<p><u>Construction/ Structure</u> Stack blocks horizontally and vertically</p> <p>Make enclosures and spaces with construction/small world (small & large scale)</p> <p>Blocks can be put on top of each other to make different shapes.</p> <p><u>Joins</u> Join construction pieces together - button joins, magnetic joins, screw blocks, push joins eg stickle bricks/ duplo</p> <p>Use glue to join paper (stick/ PVA)</p> <p>We can join different parts together using glue.</p>	<p><u>Construction/Structure</u> Make imaginative 'small world' with blocks and construction (small & large scale)</p> <p>Explore materials freely eg boxes to develop ideas about what to make and build models eg castle</p> <p>Boxes can be put on top of each other to make different shapes.</p> <p><u>Joins</u> Use different tape to join We can join different parts together using tape</p> <p><u>Using Tools</u> Use three finger scissors to cut a snips/straight line.</p>	<p><u>Construction/ Structure</u> Make simple models by choosing the materials they want to use. (small & large scale)</p> <p>Models can be made from different materials</p> <p><u>Joins</u> Select how to join their models/ product together by independently choosing from the making trolley.</p> <p>We can join different parts together</p> <p><u>Using Tools</u> Continue to develop a comfortable scissor grip</p> <p>Explore how a blender works.</p>

	<p>We can screw blocks together.</p> <p><u>Using Tools</u> Use a glue spreader.</p> <p>Use palm scissors to make snips</p> <p>Use a knife to spread</p> <p>With support use tools safely</p> <p>Sometimes we need something to help us to do a job</p> <p><u>Food Technology</u> With support, practise spreading, stirring and mixing.</p> <p>Decorate a gingerbread man.</p> <p>Develop snack preparation skills daily: chopping, spreading, pouring</p> <p>Most food needs to be made or prepared.</p>	<p>Use one handed tools and equipment with increasing control eg knives, spoons, hammers</p> <p>Explore hole punches and paper clips</p> <p>With support use tools safely</p> <p>Sometimes we need something to help us to do a job</p> <p><u>Food Technology</u> Melt chocolate to make Easter nests</p> <p>Observe changes in food when heating</p> <p>Develop snack preparation skills daily: chopping, spreading, pouring</p> <p>You need to wash your hands when making food.</p> <p>Most food needs to be made or prepared.</p>	<p>With support use tools safely and with increasing control eg knife for chopping</p> <p>Tools can help us to do a job.</p> <p><u>Food Technology</u> Chop and blend fruit to make a summer smoothie.</p> <p>Observe change in food when blended.</p> <p>Develop snack preparation skills daily: chopping, spreading, pouring</p> <p>Food can be prepared by chopping, spreading and pouring</p>
<p>Reception</p>	<p><u>Construction/Structure</u> Begin to talk about construction model designs.</p> <p>Build with a purpose using large and small construction eg crates, planks, small join construction eg lego</p> <p>Discuss how they they can build stronger models</p> <p>Models need to be strong so that they don't break</p> <p><u>Joins</u> Use paper fasteners to create a simple lever mechanism eg clock face hands</p> <p>Some joins can make a moving part.</p> <p><u>Using Tools</u> Use a vegetable peeler and masher when preparing vegetables for soup.</p>	<p><u>Wheels & Movement</u> Dismantle a toy vehicle/ objects using screwdrivers</p> <p>A vehicle has wheels, and somewhere to sit</p> <p>Identify wheels and axle on a toy vehicle</p> <p>Make junk model vehicle with moving wheels</p> <p>Draw a picture of their model.</p> <p><u>Joins</u> Use a hole puncher to make holes in wheels for the axle.</p> <p>Use a variety of joining materials - tape, string, glue, paper clips</p> <p>To make a moving part the join needs to be bigger.</p>	<p><u>Textiles</u> Make a weaved basket</p> <p><u>Joins</u> Make slits in paper using scissors.</p> <p>Staple together 2 pieces of paper eg book</p> <p>Different joins are needed to join two or more parts together.</p> <p><u>Using Tools</u> Use a juicer to extract juice.</p> <p>Use a stapler safely</p> <p><u>Food Technology</u> Design and make a summer fruit drink</p>

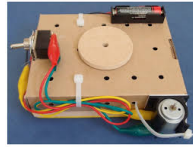
	<p>Some vegetables need to be peeled.</p> <p>A masher mashes vegetables up</p> <p><u>Food Technology</u></p> <p>Make a harvest vegetable soup following simple instructions</p> <p>Observe changes in food when heated and mashed</p> <p>Washing hands before preparing and making food is important</p>	<p><u>Using Tools</u></p> <p>Use a screwdriver to dismantle.</p> <p>Use a knife to spread/cut/chop</p> <p>Use a grater to grate cheese</p> <p>Tools need to be used carefully.</p> <p>Screwdrivers can be used on screws.</p> <p>A knife is used to spread/cut and chop food.</p> <p>A grater makes food go into small pieces.</p> <p><u>Food Technology</u></p> <p>Prepare and make a sandwich</p> <p>Eating healthily is important</p> <p>Washing hands before preparing and making food is important</p>	<p>Talk about about what they like/ dislike about their drink(Evaluate)</p> <p>Washing hands before preparing and making food is important</p>
<p>Year 1</p>	<p>Structures stability and strength - Bridges</p> 	<p>Food and Nutrition Preparing Fruit and vegetables</p> 	<p>Moving Mechanisms- Wheels and Axles</p> 
	<p>Design a bridge that a car can go over.</p> <p>Investigate different materials and say which materials may be suitable</p> <p>Build a bridge using lego, wooden blocks and junk model materials.</p> <p>Choose materials to make a strong bridge.</p> <p>Use masking tape to join the materials together.</p> <p>Begin to solve problems if the design does not</p>	<p>We should eat 5 portions of fruit and veg a day to stay healthy.</p> <p>Fruit and vegetables can be grown from plants or in the ground.</p> <p>Trying different foods is important.</p> <p>Use a knife safely to spread butter onto toast and cut the toast into 2 pieces using the bridge method</p> <p>Use a peeler and a grater safely.</p>	<p>Design a toy that moves by drawing a simple diagram.</p> <p>Build a moving toy using wheels and axles.</p> <p>Choose materials to make a toy car.</p> <p>A toy car rolls because it has wheels and axles. Wheels need to be round to make the vehicle move.</p> <p>A piece of dowling needs to connect the wheels so that they can move.</p>

	<p>work.</p> <p>Cars travel over bridges.</p> <p>Trains go under bridges and some go over bridges.</p> <p>Cardboard is stronger than paper.</p>	<p>Select ingredients to make a healthy and tasty wrap.</p> <p>Prepare and make a wrap.</p> <p>Fold a wrap in different ways to keep the filling in.</p>	<p>The wheels need to be secure to the dowel rod.</p> <p>If my design doesn't work, I need to find out why and what I can do different to make it better.</p>
<p>Year 2</p>	<p>Structures Frame Structures</p> 	<p>Food and Nutrition Portable Snacks</p> 	<p>Moving Mechanisms Sliders and Levers</p> 
	<p>Frame structures are strong and stiff</p> <p>An example of a frame structure is a climbing frame.</p> <p>Investigate what materials are useful for strengthening and stiffening structures and why this is.</p> <p>A brace is used to prevent a structure from spreading apart</p> <p>Design a swing for a lego character</p> <p>Select materials, thinking about their properties.</p> <p>Use a ruler to make measurements.</p> <p>Cut material to the correct size to use to make a</p>	<p>Hygiene is important when preparing and cooking food.</p> <p>Name and sort foods into the five groups in The Eatwell Plate</p> <p>Everyone should eat at least five portions of fruit and vegetables every day</p> <p>Use techniques such as cutting, peeling and grating with greater confidence and independence.</p> <p>Be introduced to the bridge and the claw technique to chop vegetables safely.</p> <p>Begin to use the bridge and claw technique, under close supervision, to cut vegetables and</p>	<p>Use simple tools and know their purpose in making a pop up book that contains sliders in books</p> <p>Sliders and levers are used in real life</p> <p>A slider is a rod that moves and can be pushed or pulled</p> <p>A guide bridge stops the slider rod from rotating</p> <p>Different mechanisms create different types of movement</p> <p>Use simple fixing techniques when making a card (i.e. masking tape to secure a lollipop stick slider)</p>

	<p>swing.</p> <p>Evaluate my swing and say what I could do better next time to make a better swing.</p> <p>Gustavo Eiffel was a structural engineer who designed the Eiffel Tower</p> <p>Isambard King Brunel was a structural engineer who designed the Thames tunnel.</p>	<p>make crudites.</p> <p>Prepare simple dishes safely and hygienically, using a heat source</p> <p>Prepare vegetables to make a samosa filling.</p> <p>Fold pre-bought pastry to keep the vegetables in.</p> <p>Describes what went well when making the samosas and what could have gone better.</p>	<p>Investigate how to make a slider.</p> <p>Evaluate any problems and make any improvements.</p> <p>Investigate different materials to make the final product.</p> <p>Choose materials carefully because of their properties.</p>
<p>Year 3/4 Cycle 1</p>	<p>Electrical Systems Simple Circuit and Switches - Paper Switches</p> 	<p>Food and Nutrition Vegetable Soup</p> 	<p>Moving Mechanisms Linked levers</p> 
	<p>Copper tape can be used in the same way as wire.</p> <p>Copper tape is thin and lightweight so can be used for projects.</p> <p>The + side of the LED needs to be connected to the + side of the cell.</p> <p>Battery means a number of cells together.</p> <p>A switch can be made by using copper tape.</p> <p>Y3 - Annotate a simple diagram Y4 - Draw a diagram and annotate it with some detail</p> <p>Y3 -Experiment with a variety of paper circuits Y4 -Experiment with a variety of paper circuits, giving reasons for why things are working/not</p>	<p>Knives, peelers and graters are sharp and you need to be careful when you use them.</p> <p>Carbohydrates and protein make soup more filling.</p> <p>Some food needs to be kept in the fridge to ensure that it is safe to eat.</p> <p>Food should not be eaten past the Use by date.</p> <p>Soup can be blended to change its consistency.</p> <p>Potatoes can be added to soup to make it thicker.</p> <p>Y3 -Use bridge grip to cut rounded fruit and vegetables.</p> <p>Y3- Use a claw grip to cut long and thin</p>	<p>Linked lever systems are a number of levers that are joined together to make something move</p> <p>A pivot is the point around a lever turns</p> <p>The fulcrum is where the lever balances eg seesaw.</p> <p>Y3 - Draw a simple diagram and annotate a diagram Y4 - Draw a diagram and annotate it with some detail</p> <p>Y3 - Experiment with and make a linked lever system Y4- Experiment with different joins. Y3 and Y4 - Experiment with fixed and moving pivots</p> <p>Y3 and Y4 - Create a mood board to gather</p>

	<p>working.</p> <p>Y3 and Y4 - Create a mood board to gather inspiration and develop their own ideas</p> <p>Y3 and Y4 - Design a product for a purpose</p> <p>Y3 - Make a prototype</p> <p>Y3 - Make product using skills developed Y4 - Choose materials carefully and make a more complex circuit.</p> <p>Y3 and Y4 -Evaluate and amend designs to ensure product is clear and achieves the end goal</p>	<p>vegetables</p> <p>Y3 - Use a claw grip for slicing and dicing.</p> <p>Y4 - Choose the correct grip for cutting.</p> <p>Y3 and Y4 - Follow kitchen safety rules</p> <p>Year 3 and 4 - Experiment with recipes including chopped and diced food</p> <p>Y3 -Compare and contrast attempts at chopping. Y4 - Compare own first attempt at chopping (photographed) with most recent and discuss the improvement</p> <p>Year 3 and 4 - Create a mood board to gather inspiration.</p> <p>Y3 and 4 - Create a design choosing ingredients and selecting equipment that they will need to use.</p> <p>Y3 and Y4 - Make product using skills</p> <p>Y3 -Measure ingredients accurately using a measuring jug in ml/ weighing scale (g)</p> <p>Y 3 and Y4 - Evaluate and amend designs.</p> <p>Y4 - Use a blender to change the consistency of soup</p>	<p>inspiration.</p> <p>Y 3 and Year 4 - Design a product for a purpose</p> <p>Y3 and Y4 - Think carefully about material choices and explain reasons why.</p> <p>Y3 - Use a hammer, saw, and glue to make a linked lever safety gate in small groups.</p> <p>Y4 - Use a hammer, saw, and glue to make a linked lever safety gate with increasing confidence.</p> <p>Y3 and Y4 - Adapt the design diagram to make their own design</p> <p>Y3 and Y4 - Organise the annotated diagrams to give enough detail</p> <p>Y3 and Y4 - Make a prototype of a safety barrier</p> <p>Y3 and Y4 - Create a mood board to gather inspiration.</p> <p>Y3 and Y4 - Create a design</p> <p>Y 3 and Y4 - Make product using skills</p> <p>Y3 and Y4 - Evaluate and amend designs.</p>
<p>Year 3/4 Cycle 2</p>	<p>Shell structures Boats</p> 	<p>Food and Nutrition Healthy and Varied Diet</p> 	<p>Moving Mechanisms Pneumatics</p> 
	<p>There are a variety of natural and manufactured</p>	<p>Knives, peelers and graters are sharp and you</p>	<p>Pneumatics-powered machines use compressed</p>

	<p>shell structures.</p> <p>Natural shell structures include; eggshell, snail shell, sea shell etc.</p> <p>Manufactured shell structures include; tunnels, roofs, boats etc.</p> <p>Shell structures are usually curved, hollow, lightweight structures.</p> <p>Manufactured shell structures often gain their strength from their shell used in conjunction with a frame structure.</p> <p>Y3 - Draw an annotated cross-section diagram showing how natural and manufactured shells gain strength.</p> <p>Y4 - Draw an annotated cross-section diagram showing how natural and manufactured shells gain strength providing more detail</p> <p>Y3 Begin to use folds to shape cardboard by scoring, and bending materials</p> <p>Y4 Use folds to shape cardboard by scoring, and bending materials</p> <p>Y3 and Y4 - Use joins to investigate making in shell structures: flange, slot, tab, single foot fold and a double foot fold.</p> <p>Y3 and Y4 - Use CAD to make a shell structure</p> <p>Y3 and Y4 -Design and make a shell structure</p> <p>Y3 and Y4 - Create a mood board to gather inspiration.</p> <p>Y3 and Y4 - Create a design</p> <p>Y3 and Y4- Make product using skills</p> <p>Y3 and Y4 - Evaluate and amend designs.</p>	<p>need to be careful when you use them.</p> <p>A balanced diet is one that has all of the essential elements that the human body needs.</p> <p>Balanced meals are made up of four key components: protein, carbohydrates, vegetables, and fat.</p> <p>Some food needs to be kept in the fridge to ensure that it is safe to eat.</p> <p>Food should not be eaten past the Use by date.</p> <p>Plan a balanced meal.</p> <p>Y3 -Use bridge grip to cut rounded fruit and vegetables.</p> <p>Y3 - Use a claw grip to cut long and thin vegetables</p> <p>Y3 - Use a claw grip for slicing and dicing.</p> <p>Y4 - Choose the correct grip for cutting.</p> <p>Follow kitchen safety rules</p> <p>Experiment with recipes including chopped and diced food</p> <p>Compare and contrast attempts at chopping.</p> <p>Create a mood board to gather inspiration.</p> <p>Create a design</p> <p>Make product using skills</p> <p>Evaluate and amend designs.</p> <p>Measure ingredients accurately.</p>	<p>air or other gases to make something move.</p> <p>Pneumatic machines have pistons, hollow cylinders and connecting tubes.</p> <p>A piston is a disc that slides to and fro in a reciprocating movement inside a hollow cylinder.</p> <p>Compression in pneumatics is where air is tightly packed into a space.</p> <p>The operation of pneumatics has an input, process and a resulting output.</p> <p>The fulcrum is where the lever balances eg seesaw.</p> <p>Y4 - Apply knowledge of levers and frame structures to make pneumatic systems.</p> <p>Y3 - Label and annotate a pneumatic mechanism.</p> <p>Y3 - Use syringes and tubing for pneumatic mechanisms.</p> <p>Y3 - Draw and annotate a design diagram for a pneumatic mechanism.</p> <p>Y4 - Choose appropriate materials for each part of a pneumatic system.</p> <p>Create a mood board to gather inspiration.</p> <p>Create a design</p> <p>Make product using skills</p> <p>Evaluate and amend designs.</p>
Year 5/6 Cycle 1	<p align="center">Moving Mechanisms Electronic Motors</p>	<p align="center">Food and Nutrition Making Bread</p>	<p align="center">Moving Mechanisms Pulleys and Gears</p>



Electronic motors use rotary movement which can be used to turn something.

A simple circuit is made up of a battery, two wires, and a motor.

The speed of the rotary movement can be increased by adding more batteries.

Explore everyday items that use electronic motors - toothbrush, whisk, fan.

Assemble and disassemble a circuit with a simple motor.

Y5 - draw a simple diagram with annotations about the structure of a circuit.

Y6 - draw a more detailed diagram with annotation analysing the features of a circuit.

Y5 and 6 - Select appropriate tools and components such as cardboard, wood, dowels, tape, glue gun, and a coping saw.

Make adaptations to product designs.

Evaluate a completed design.

Bread is a staple part of a balanced diet.

Bread is a carbohydrate.

There are many different types of bread which are suitable for various dietary needs.

Kneading dough helps it to rise.

Yeast is a rising agent that causes the bread to rise.

The different stages of bread making are measuring, mixing, proving, shaping and baking.

Investigate and evaluate bread products using senses.

Plan, design and make a bread product for a purpose.

Score bread with a knife to form a design.

Select from and use a wide range of tools and equipment - cutting, shaping, joining and finishing. (Knives, chopping board, garlic crusher).

Y5 - begin to choose and use tools with more confidence.

Y6 - use tools with confidence

Evaluate a finished design identifying strengths and weaknesses to suggest future improvements.

Pulleys allow a greater force to have a greater impact.

A pulley is made up of a wheel with a groove, an axle and a rope.

Gears are wheels with teeth that mesh together.

Gears allow a smaller force to have a greater impact.

Explore different pulleys and gears, and their uses.

Plan, design and make a pulley system.

Choose appropriate materials to use for the final product.

Select appropriate tools and equipment - coping saw, dowel, scissors.

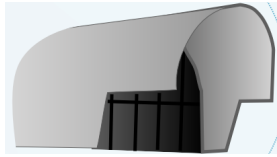
Evaluate a completed design identifying strengths and weaknesses to suggest future improvements.

Year 5/6 Cycle 2

Structures
Bridge Structures embedding arches

Food and Nutrition
Making Budget Meals

Moving Mechanisms
Cams



An arch is a curved symmetrical structure spanning an opening and typically supporting the weight of a bridge, roof, or wall above it.

There are 4 different types of bridges: beam, truss, suspension and arch.

A bridge is a structure built to span a physical obstacle e.g. a body of water, a road or railway.

The arch was perfected in Roman times.

A simple arch can be made by placing a sheet of card between two solid objects.

Arches need to be rigid and strong.

Modern architects use arches in both practical ways and aesthetic ways.

Explain how arches are made using annotated diagrams.

Explain how bridges are used with annotated diagrams.

Experiment with making a variety of bridge types.

List materials that are suitable for the product - an arch.

Plan, design and make an arch bridge structure, giving reason for the materials used.

Investigate using different materials and choose the best from their selection giving reasons for their choices.

Evaluate the success of the arch bridge



A budget meal is a meal that costs little but goes a long way.

Pasta is a good budget food as it is low cost. It is a carbohydrate which slowly releases energy and is filling.

Cooked and uncooked meat should be stored in a fridge.

Frozen food lasts a long time and batch cooking reduces waste.

Frozen vegetables hold more nutrients than fresh vegetables.

Understand the importance of health and safety in the kitchen.

Describe the differences between food stored in a fridge and in a cupboard.

Compare ingredients prices across supermarkets.

Explore ingredients such as seasoning.

Select from and use a wide range of tools and equipment - cutting, shaping, joining and finishing. (Knives, graters, chopping board, garlic crusher, pans).

With confidence use a bridge grip and claw grip to cut, slice and dice.

Design and make a budget meal for a healthy diet.

Make a prototype of a budget meal.



A cam is a mechanical linkage that can rotate or slide.

Cams can be found in old-fashioned wooden toys, electric drills, car engines and food processors.

Cams can create circular movement.

Cams can also create side to side movement.

Measure, assemble, estimate and join.

Use lever mechanisms, fulcrums, cam followers, cranks, cam shafts (axle), and circle cams.

Compare the different movements of various cams.

Plan, design and make a product which incorporates a cam.

Design a cam for a specific purpose.

Evaluate the effectiveness of the product.

Modify the design for the future.

	<p>structures built.</p> <p><i>Evaluate the success of the bridge.</i></p> <p>Adapt the product for the needs of the audience.</p>		
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