

## DT and STEM overview 2022-2023

In our school Design & technology is a robust, inspiring and practical area of the curriculum. At the root of Design & Technology provision is the development of knowledge and the teaching of practical skills that can be utilised in many different contexts. Our DT curriculum enables all learners to gain knowledge and practical skills alongside developing personal skills including problem solving and teamwork. We encourage all children to develop their creativity and imagination as they design innovative and purposeful products that solve real and relevant problems. We also value time given for evaluation and reflection, so that children can become resilient risk-takers who will ultimately be enterprising, resourceful, innovative and capable citizens.

The table below the photos of 'what DT looks like in our school' maps out the DT projects that link to each topic across school. The topics cover the appropriate skills for each year group.. Please see your individual year group page for more information on each project. A minimum of 8-12 hours should be spent on the **design, making and evaluating** process for each project. It is the expectation that children will be using the STEM suite to carry out each project where appropriate. Food prep should be in the hub or the staffroom. STEM lessons are marked in bright yellow. All projects should follow this sequence: **BRIEF/ CHALLENGE ---- RESEARCH ---- DESIGN----- MAKE PROTOTYPES----- TEST----- EVALUATE**



Here is a link to the national curriculum for Design and Technology: <https://www.gov.uk/government/publications/national-curriculum-in-england-design-and-technology-programmes-of-study/national-curriculum-in-england-design-and-technology-programmes-of-study>

What DT looks like in our school.



	AUTUMN		SPRING		SUMMER		STEM DAY
Year 1	<b>Topic - Toys</b>	Construction and Textiles Pop up puppet	<b>Topic- Transport</b>	Mechanisms- sliders and levers Moving transport picture.	<b>Topic- Under the Sea</b>	Food- Healthy and varied diet, vegetable salad and a fruit salad.	Zip wires
Year 2	<b>Topic- Land Ahoy</b>  <b>Mary Seacole and F Nightingale</b>	Preparing fruit and vegetables- Make a fruit smoothie for the beach Textiles- Joining techniques Making puppets	<b>Topic- London</b>	Construction Wheels/ Axles and mechanisms for model Fire Engines	<b>Topic- Meriden</b>	Make a savoury snack to take on a picnic.	Parachutes
Year 3	<b>Topic- Stone Age</b>	Food - Research and create a stone age meal with pudding.	<b>Topic- Egyptians</b>	Can you create a pyramid which uses leavers or linkages to open it? You must create your pyramid from a net and it should also have a map inside of how to get to the mummy.	<b>Topic- Rivers and Mountains</b>	Textiles- 2D shape to 3D product Design and make tote bags.	Machine to move rocks (pneumatics)
Year 4	<b>Topic- Romans</b>	Mechanical systems- levers and linkages Trebuchet	<b>Topic- Anglo Saxons South Africa</b>	Food- Healthy and varied diet. South African healthy meal.	<b>Topic- South America Local Area</b>	Design and make a model of a house for a flood plain. The house must have a working fan and a pulley system to help move supplies upstairs.	Design a fan to keep cool
Year 5	<b>Topic- Space</b>	Food- research, prepare and test (scientifically) food that is fit to take into space.	<b>Topic- Rainforest</b>	Design and make a moving toy with a rainforest theme and at least one light that works off a switch.	<b>Topic- Tudors</b>	Textiles- combining different stitches and fabric shapes to create a new Tudor Rose Food- Create Jumble biscuits on Tudor Day	Bridges
Year 6	<b>Topic- Behind the bombs</b>	Textiles- combining different fabric shapes Wartime Bunting Food - Create a fish and chip supper from scratch	<b>Topic- Natural Disasters (link to Behind the bombs)</b>	Electrical systems- switches and circuits Challenge: Design and create an Anderson shelter with a light bulb and a doorbell buzzer.	<b>Topic- The Mayans</b>	Explore the spices traditionally used in Mayan cooking before creating your own dish 'Guacamole bake off'	Rollercoasters



## Year 1

<p>TOYS</p>	<p><i>Use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] Use a wide range of materials and components, including construction materials and textiles according to their characteristics</i></p> <p><b>CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>• Explore construction kits</li> <li>• Join appropriately for different materials and situations e.g. glue, tape</li> <li>• cut using a template</li> <li>• Cut strip wood/dowel using hacksaw and bench hook with support</li> </ul> <p><b>TEXTILES</b></p> <ul style="list-style-type: none"> <li>• Colour fabrics using a range of techniques e.g. fabric paints, painting</li> <li>• Join fabrics by using glue, staples, over sewing, tape</li> <li>• Decorate fabrics with buttons, beads, sequins, braids, ribbons</li> </ul> <p><i>Evaluate a range of existing products</i></p> <p><i>Evaluate their ideas and products against the design criteria</i></p> <ul style="list-style-type: none"> <li>• Say what they like and do not like about items they have made and attempt to say why.</li> <li>• Talk about changes made during the making process</li> <li>• Recording products and evaluations on seesaw.</li> </ul>	<p>Challenge: Can you make a pop up puppet using a cup.</p> 
<p>Transport</p>	<p><i>Explore and use mechanisms [for example sliders], in their Products</i></p> <p><b>SHEET MATERIAL</b></p> <ul style="list-style-type: none"> <li>• Fold, tear and cut paper and card</li> <li>• Roll paper to create tubes</li> <li>• Curl paper</li> <li>• Use simple pop ups</li> <li>• Investigate strengthening sheet materials</li> </ul> <p><i>Evaluate a range of existing products</i></p> <p><i>Evaluate their ideas and products against the design criteria</i></p> <ul style="list-style-type: none"> <li>• Say what they like and do not like about items they have made and attempt to say why.</li> <li>• Talk about changes made during the making process</li> </ul> <p>Recording products and evaluations on seesaw.</p>	<p>Challenge: can you make a lorry look like it's moving along a road?</p> 
<p>Under the Sea</p>	<p><i>Use the basic principles of a healthy diet to prepare dishes</i></p> <p><i>Understand where food comes from.</i></p> <ul style="list-style-type: none"> <li>• Develop a food vocabulary using taste ,smell, texture and feel</li> <li>• Group food products e.g. fruit and vegetables</li> </ul>	<p>Challenge: Can you design a vegetable salad and a fruit salad to take on a picnic? In groups make one for a class picnic.</p>

<ul style="list-style-type: none"> <li>• Measure and weigh food items, non-standard measures e.g. spoons, cups</li> <li>• Work safely and hygienically</li> </ul> <p><i>Evaluate a range of existing products</i>  <i>Evaluate their ideas and products against the design criteria</i></p> <ul style="list-style-type: none"> <li>• Say what they like and do not like about items they have made and attempt to say why.</li> <li>• Talk about changes made during the making process</li> </ul> <p>Recording products and evaluations on seesaw.</p>	
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## Year 2

<p>Land Ahoy – Aut 1</p>	<p><i>Use the basic principles of a healthy and varied diet to prepare dishes</i>  <i>Understand where food comes from.</i></p> <ul style="list-style-type: none"> <li>• Understand the need for a variety of foods in a diet.</li> <li>• Cut, peel, grate, chop a range of ingredients</li> <li>• Measure and weigh food items, standard measures</li> <li>• Work safely and hygienically</li> </ul> <p><i>Explore and evaluate a range of existing products</i>  <i>Evaluate their ideas and products against design criteria</i></p> <ul style="list-style-type: none"> <li>• Talk about their designs as they develop and identify good and bad points</li> <li>• Discuss how closely their finished products meet their design criteria</li> </ul> <p>Recording products and evaluations on seesaw.</p> <p>Plan several designs and then choose your final one.</p> <p><b>Textiles/collage (Art objectives)</b></p> <ul style="list-style-type: none"> <li>• Cut and shape fabric using scissors/snips.</li> <li>• Apply shapes with glue or by stitching.</li> <li>• Apply decoration using beads, buttons, feathers etc.</li> <li>• <u>Colour</u> Apply colour with printing, dipping, fabric crayons.</li> </ul> <p><i>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</i>  <i>Select from and use a wide range of materials and components, including textiles according to their characteristics</i></p> <p><b>TEXTILES</b></p> <ul style="list-style-type: none"> <li>• Colour fabrics using a range of techniques e.g. fabric paints, printing</li> <li>• Cut out shapes which have been created by drawing round a template onto the fabric</li> <li>• Join fabrics by using running stitch</li> <li>• Decorate fabrics with buttons, beads, sequins, braids, ribbons</li> </ul> <p><i>Explore and evaluate a range of existing products</i>  <i>Evaluate their ideas and products against design criteria</i></p>	<p>Challenge: We need a healthy smoothie for the beach at the St. Lucia hotel.</p> 
<p>Florence Nightingale and Mary Seacole - Aut 2</p>	<p><b>TEXTILES</b></p> <ul style="list-style-type: none"> <li>• Colour fabrics using a range of techniques e.g. fabric paints, printing</li> <li>• Cut out shapes which have been created by drawing round a template onto the fabric</li> <li>• Join fabrics by using running stitch</li> <li>• Decorate fabrics with buttons, beads, sequins, braids, ribbons</li> </ul> <p><i>Explore and evaluate a range of existing products</i>  <i>Evaluate their ideas and products against design criteria</i></p>	<p>Challenge: Can you create a puppet of a person who helps others?</p> 

	<ul style="list-style-type: none"> <li>• Talk about their designs as they develop and identify good and bad points</li> <li>• Discuss how closely their finished products meet their design criteria</li> </ul> <p>Recording products and evaluations on seesaw.</p>	
<p>LONDON</p>	<p><i>Build stable structures Explore and use mechanisms [for example, levers, wheels and axles], in their products</i></p> <p><b>SHEET MATERIAL CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>• Cut along lines, straight and curved</li> <li>• Use hole punch safely</li> <li>• Insert paper fasteners for card linkages</li> <li>• Create hinges</li> <li>• Investigate joining fixed, temporary and moving</li> </ul> <p><b>CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>• Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels</li> <li>• Attach wheels to a chassis using an axle</li> <li>• Mark out materials to be cut using a template</li> <li>• Cut strip wood/dowel using hacksaw and bench hook with support.</li> <li>*Create a mechanism to secure a ladder.</li> </ul> <p><i>Explore and evaluate a range of existing products</i></p> <p><i>Evaluate their ideas and products against design criteria</i></p> <ul style="list-style-type: none"> <li>• Talk about their designs as they develop and identify good and bad points</li> <li>• Discuss how closely their finished products meet their design criteria</li> </ul> <p>Recording products and evaluations on seesaw.</p>	<p>Challenge: First use a construction kit to make a model fire engine with free running wheels then - work as a group to make a junk model fire engine with a wooden axel, moving wheels, doors that open with a hinge and a ladder that moves and stays up.</p> 
<p>MERIDEN THEN AND NOW</p>	<p><i>Use the basic principles of a healthy and varied diet to prepare dishes</i></p> <p><i>Understand where food comes from.</i></p> <ul style="list-style-type: none"> <li>• Understand the need for a variety of foods in a diet.</li> <li>• Cut, peel, grate, chop a range of ingredients</li> <li>• Measure and weigh food items, standard measures</li> <li>• Work safely and hygienically</li> </ul> <p><i>Explore and evaluate a range of existing products</i></p> <p><i>Evaluate their ideas and products against design criteria</i></p> <ul style="list-style-type: none"> <li>• Talk about their designs as they develop and identify good and bad points</li> <li>• Discuss how closely their finished products meet their design criteria</li> </ul> <p>Recording products and evaluations on seesaw.</p>	<p>Challenge: Make a savoury snack to take on a picnic.</p> 

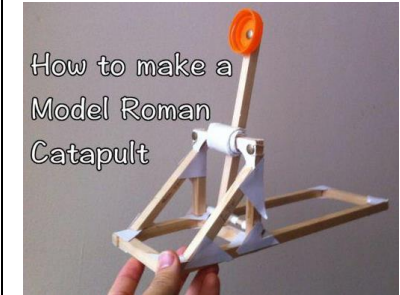
## Year 3

Stone Age	<i>Understand the principles of a healthy and varied diet</i>	Challenge: Research and create a stone age meal with pudding.
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	<p><i>Cook a variety of predominantly savoury dishes.</i></p> <ul style="list-style-type: none"> <li>• Develop sensory vocabulary/knowledge using, smell, taste, texture and feel</li> <li>• Follow instructions</li> <li>• Measure and weigh ingredients</li> <li>• Work safely and hygienically</li> </ul> <p><i>Evaluate their ideas and products against their own design criteria</i></p> <p>Identify the strengths and weaknesses of their design ideas Decide which design idea to develop Record final products and evaluations on seesaw in line with the policy.</p>	
<p>Egyptians</p>	<p><i>Apply their understanding of how to strengthen, stiffen structures</i></p> <p><i>Understand and use mechanical systems in their products [for example levers, linkages and pneumatics]</i></p> <p><b>SHEET MATERIAL</b></p> <ul style="list-style-type: none"> <li>• Cut slots</li> <li>• Use lolly sticks/card to make levers and linkages</li> <li>• Use linkages to make movement larger or more varied.</li> </ul> <p><b>CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>• Create shell or frame structures, strengthen frames with diagonal struts</li> <li>• Create nets</li> <li>• Make structures more stable by giving them a wide base</li> <li>• Measure and mark square selection, strip and dowel accordingly to 1cm</li> </ul> <p><i>Evaluate their ideas and products against their own design criteria</i></p> <p>Identify the strengths and weaknesses of their design ideas Decide which design idea to develop Record final products and evaluations on seesaw in line with the policy.</p>	<p>Challenge: Can you create a pyramid which uses leavers or linkages to open it? You must create your pyramid from a net and it should also have a map inside of how to get to the mummy.</p>  <p><a href="http://artasticartists.blogspot.com">ARTASTIC! Miss Oetken's Artists: Egyptian Art with 3-D Pyramid &amp; fold out Tomb map (artasticartists.blogspot.com)</a></p> <p>JD – support put the levers together and person on the outside opens them apart which opens the inside so it springs open.</p>
<p>Rivers and Mountains</p>	<p><i>Use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</i></p> <p><i>Use a range of materials and components, including construction materials and textiles.</i></p> <p><b>TEXTILES</b></p>	<p>Challenge: Make a Beach bag for use over the summer.</p>

	<ul style="list-style-type: none"> <li>• Join fabrics using running stitch, over sewing, back stitch</li> <li>• Explore fastenings</li> <li>• Use appropriate decoration techniques e.g. appliqué (glued or simple stitches)</li> <li>• Create a simple pattern</li> </ul> <p><i>Evaluate their ideas and products against their own design criteria</i>  Identify the strengths and weaknesses of their design ideas  Decide which design idea to develop  Record final products and evaluations on seesaw in line with the policy.</p>		
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## Year 4


<p>Romans</p>	<p><i>Apply understanding of how to strengthen, stiffen and reinforce more complex structures</i>  <i>Understand and use mechanical systems in their products [for example, gears, pulleys, cams]</i></p> <p><b>SHEET MATERIAL</b></p> <ul style="list-style-type: none"> <li>• Cut internal shapes</li> <li>• Use and explore complex pop ups</li> <li>• Create nets</li> </ul> <p><b>CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>• Prototype frame and shell structures</li> <li>• Use glue gun with close supervision</li> </ul> <p><i>Evaluate Investigate and analyse a range of existing products</i>  <i>Evaluate their ideas and products against their own design criteria and consider the views of others</i></p> <ul style="list-style-type: none"> <li>• Consider and explain how the finished product could be improved</li> <li>• Discuss how well the finished product meets the design criteria and how well it meets the needs of the user.</li> </ul> <p>Record final products and evaluations on seesaw in line with the policy.</p>		<p>Challenge: You need to design and create a weapon that can fire at least 3 metres.</p>
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<p>Anglo Saxons</p> <p>South Africa</p>	<p><i>Understand and apply the principles of a healthy and varied diet</i></p> <p><i>Prepare and cook a variety of predominantly savoury dishes</i></p> <ul style="list-style-type: none"> <li>Analyse taste, texture, smell and appearance of a range of foods</li> <li>Make healthy eating choices understanding a balanced diet</li> <li>Join and combine a range of ingredients e.g. snack foods</li> <li>Measure and weigh ingredients accurately</li> <li>Work safely and hygienically</li> </ul> <p><i>Evaluate, Investigate and analyse a range of existing products</i></p> <p><i>Evaluate their ideas and products against their own design criteria and consider the views of others</i></p> <ul style="list-style-type: none"> <li>Consider and explain how the finished product could be improved</li> <li>Discuss how well the finished product meets the design criteria and how well it meets the needs of the user.</li> </ul> <p>Record final products and evaluations on seesaw in line with the policy.</p>	 <p>Challenge: research and create a new South African dish.</p>
<p>South America</p> <p>Local Area</p>	<p><i>Apply understanding of how to strengthen, stiffen and reinforce more complex structures</i></p> <p><i>Understand and use mechanical systems in their products [for example, gears, pulleys]</i></p> <p><b>SHEET MATERIAL</b></p> <ul style="list-style-type: none"> <li>Cut internal shapes</li> <li>Use and explore complex pop ups</li> <li>Create nets</li> </ul> <p><b>CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>Incorporate a circuit with a bulb or buzzer into a model</li> <li>Prototype frame and shell structures</li> <li>Use glue gun with close supervision</li> </ul> <p><i>Evaluate, Investigate and analyse a range of existing products</i></p> <p><i>Evaluate their ideas and products against their own design criteria and consider the views of others</i></p> <ul style="list-style-type: none"> <li>Consider and explain how the finished product could be improved</li> <li>Discuss how well the finished product meets the design criteria and how well it meets the needs of the user.</li> </ul> <p>Record final products and evaluations on seesaw in line with the policy.</p>	<p>Challenge: The only bit of land that is available to build on in a town is now flooding regularly. Design and make a model of a house for this location. The house must have a working fan and a pulley system to help move supplies upstairs.</p> 



# Year 5

<p>Space</p>	<p><i>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</i>  <i>Understand seasonality, and know where and how a variety of ingredients are grown,</i></p> <p><b>FOOD</b></p> <ul style="list-style-type: none"> <li>• Prepare food products taking into account properties of ingredients and sensory characteristics</li> <li>• Weigh and measure using scales</li> <li>• Cut and shape ingredients using appropriate tools and equipment e.g. grating</li> <li>• Decorate appropriately</li> <li>• Work safely and hygienically</li> </ul> <p><i>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</i></p> <p><i>Understand how key events in design and technology have helped shape the world</i></p> <p>Use the design criteria to inform their decisions about ways to proceed</p> <ul style="list-style-type: none"> <li>• Identify what does and does not work in the product.</li> <li>• Make suggestions as how their design could be improved.</li> </ul> <p>Record final products and evaluations on seesaw in line with the policy.</p>	<p>Challenge: research, prepare and test (scientifically) food that is fit to take into space.</p>  <p>Create Jumble biscuits on Tudor Day:</p> 
<p>The Rainforest (Brazil)</p>	<p><i>Understand and use mechanical systems in their products [for example, gears, pulleys, cams]</i></p> <p><b>SHEET MATERIAL</b></p> <ul style="list-style-type: none"> <li>• Cut accurately and safely to a marked line</li> <li>• Join and combing materials with temporary, fixed or moving joins</li> <li>• Choose an appropriate sheet material for the purpose</li> </ul> <p><b>CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>• Use bradawl to mark hole positions</li> <li>• Use hand drill to drill tight and loose fit holes</li> <li>• Join materials using appropriate methods</li> <li>• Cut strip wood, dowel, square section wood accurately.</li> </ul> <p>Explore the effect of different shaped cams, choosing the right shape for the desired effect.</p>	<p>Challenge: Design and make a moving toy with a rainforest theme and at least one light that works off a switch.</p> 

	<ul style="list-style-type: none"> <li>• Build frameworks using a range of materials e.g. wood, card corrugated plastic too.</li> <li>• Incorporate motor and a switch into a model</li> <li>• Use glue gun with close supervision</li> </ul> <p><i>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events in design and technology have helped shape the world</i></p> <p>Use the design criteria to inform their decisions about ways to proceed</p> <ul style="list-style-type: none"> <li>• Identify what does and does not work in the product.</li> <li>• Make suggestions as how their design could be improved.</li> </ul> <p>Record final products and evaluations on seesaw in line with the policy.</p>	
Tudors	<p><i>Select from and use a wider range of materials and components, including construction materials and textiles according to their functional properties</i></p> <p><b>TEXTILES -DT</b></p> <ul style="list-style-type: none"> <li>• Create 3D products using pattern pieces and seam allowance</li> <li>• Decorate textiles appropriately often before joining components</li> <li>• Join fabrics using over sewing, back stitch, blanket stitch</li> <li>• Combine fabrics to create more useful properties</li> </ul> <p><b>Textiles - Art objectives</b></p> <ul style="list-style-type: none"> <li>• Use fabrics to create 3D structures</li> <li>• Use different grades of threads and needles</li> </ul> <p><i>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events in design and technology have helped shape the world</i></p> <p>Use the design criteria to inform their decisions about ways to proceed</p> <ul style="list-style-type: none"> <li>• Identify what does and does not work in the product.</li> <li>• Make suggestions as how their design could be improved.</li> </ul> <p>Record final products and evaluations on seesaw in line with the policy.</p> <p>Food - Jumble biscuits</p>	<p>Challenge: Design and create a new Tudor Rose with embroidery inspired by Tudor embroidery work.</p> 

<p>Behind the bombs</p>	<p><b>Bunting</b>  <i>Select from and use a wider range of tools and equipment to perform practical tasks</i>  <i>Select from and use a wider range of materials and components, including construction materials and textiles according to their functional properties and aesthetic qualities</i></p> <p><b>TEXTILES</b> • Understand pattern layout  • Pin and tack fabric pieces together  • Join fabrics using machine stitching (closer supervision)  • Make quality products</p> <p><b>Anderson shelter</b>  <i>Apply understanding of how to strengthen, stiffen and reinforce more complex structures</i>  <i>Understand and use mechanical systems in their products [for example, gears, pulleys]</i></p> <p><b>SHEET MATERIAL</b> • Cut internal shapes  • Create nets</p> <p><b>CONSTRUCTION</b> • Cut strip wood, dowel, square section wood accurately to 1mm  • Incorporate a circuit with a bulb or buzzer into a model  • Prototype frame and shell structures  • Use glue gun with close supervision</p> <p><u>Evaluate</u> <i>Investigate and analyse a range of existing products</i>  <i>Evaluate their ideas and products against their own design criteria and consider the views of others</i></p> <ul style="list-style-type: none"> <li>• Consider and explain how the finished product could be improved</li> </ul> <p>Justify their decisions about materials and methods of construction</p> <ul style="list-style-type: none"> <li>• Reflect on their work using design criteria stating how well the design fits the needs of the user</li> <li>• Discuss how well the finished product meets the design criteria and how well it meets the needs of the user.</li> </ul> <p>Record final products and evaluations on seesaw in line with the policy.</p>	<p>Challenge: Create sewn decorations for a street party.</p>  <p>Challenge: Design and create an Anderson shelter with a light bulb and a doorbell buzzer.</p> 
<p>The Mayans</p>	<p><i>Use a range of cooking techniques</i>  <i>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</i></p> <ul style="list-style-type: none"> <li>• Select and prepare foods for a particular purpose</li> </ul>	<p>Challenge:  Create a fish and chip supper from scratch</p>

- Taste a range of ingredients, food items to develop a sensory food vocabulary for use when designing.
- Join and combine food ingredients e.g. beating, rubbing in
- Decorate appropriately
- Work safely and hygienically

*Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work*

*Understand how key events and individuals in design and technology have helped shape the world*

- Reflect on their work using design criteria stating how well the design fits the needs of the user
  - Make suggestions as how their design could be improved
- Record final products and evaluations on seesaw in line with the policy.

Explore the spices traditionally used in Mayan cooking before creating your own dish 'Guacamole bake off'

