



# St. Luke's DT Long Term Plan

including objectives from progression of skills

## Progression of Skills

### Whole School Art and DT Overview

		Design Knowledge and Skills	Evaluate Knowledge and Skills	Technical Knowledge and Skills	Significant Inventors / Designers
		<i>Y1 Audience is themselves.</i>			
<b>YEAR 1</b>	<b>Autumn 1</b> Mini Unit Materials: Junk Modelling Houses	<ul style="list-style-type: none"> <li>Know that there is a reason behind why they need to design and make something</li> <li>understand a design brief (without using the term brief) and design something to meet it (e.g. to make something stronger, more attractive)</li> <li>that a design can be like an original product, with a small adjustment to improve it (e.g. change of material)</li> <li>have own ideas</li> <li>Discuss why they have made the choices they have in their design</li> <li>Make choices around materials from a given list</li> </ul>	<b>Evaluate products against a brief</b> <ul style="list-style-type: none"> <li>With help and advice, change part of the design in response to a problem (during)</li> <li>Identify good features of a product and suggest improvements (after)</li> <li><b>Evaluate if the product meets the brief (after)</b></li> <li>Talk about things that other people have made (after)</li> </ul>	<ul style="list-style-type: none"> <li>know that materials can be joined together in different ways (EYFS) that some methods create a more permanent joins than others (e.g. temporary: paperclips, tape, permanent: glue, staples, running stitch)</li> <li>know that tools need to be handled safely. That there are safety rules associated with using each tool.</li> <li>know that there are some techniques that can reinforce materials (how to make materials stronger, stiffer and more stable)</li> <li>begin to measure and join materials, with some support</li> <li>build simple 3D structures</li> <li>describe differences in materials</li> <li>suggest ways to make material/product stronger</li> </ul>	
	<b>Autumn 2</b> Textiles: Christmas stocking	<ul style="list-style-type: none"> <li>Know that there is a reason behind why they need to design and make something</li> <li>have own ideas</li> <li>draw a plan which could be an adjustment to an existing design (from an example)</li> </ul>	<b>Evaluate products against a brief</b> <ul style="list-style-type: none"> <li>Evaluate existing products and identify what is good and what could be improved (before)</li> <li>Discuss reasons for any changes to initial design – including why they were needed (after)</li> <li>Identify good features of a product and suggest improvements (after)</li> </ul>	<ul style="list-style-type: none"> <li>Identify different forms of textiles / fabric (e.g. felt, velvet, cotton)</li> <li>Choose suitable textiles</li> <li>Cut pieces of fabric accurately</li> <li>Join textiles to make a product, with some support</li> <li>Use different fabrics and materials in collages</li> </ul>	
	<b>Spring 2</b> Food: Bread / Pitta Pizzas	<ul style="list-style-type: none"> <li>Know that there is a reason behind why they need to design and make something</li> <li>work as a class to identify the design criteria in a brief (although terminology of brief is not yet used)</li> <li>have own ideas</li> <li>Discuss why they have made the choices they have in their design</li> <li>Make a list of materials needed for their design</li> </ul>	<b>Evaluate products against a brief</b> <ul style="list-style-type: none"> <li>Know that food can be evaluated for taste</li> <li>Evaluate existing products and identify what is good and what could be improved (before)</li> <li>Identify good features of a product and suggest improvements (after)</li> <li>Evaluate if the product meets the brief (after)</li> </ul>	<ul style="list-style-type: none"> <li>Know that there are basic hygiene rules that should be followed when preparing food (e.g. hands washed, hair up, apron on, sleeves rolled up)</li> <li>Know where some food comes from (e.g. animals)</li> <li>describe differences between some food groups (i.e. sweet, vegetable etc.)</li> <li>Cut, peel and grate safely, with support</li> <li>Food Hygiene: Wash hands &amp; clean surfaces</li> </ul>	John Montague (Earl of sandwich); Sandwich
	<b>Summer 2</b> Mechanisms: Flap Books / Moving Pictures	<ul style="list-style-type: none"> <li>Know that there is a reason behind why they need to design and make something</li> <li>Know that a design can be like an original product, with a small adjustment to improve it (e.g. change of material)</li> <li>have own ideas</li> <li>draw a plan which could be an adjustment to an existing design (from an example)</li> <li>Discuss why they have made the choices they have in their design</li> <li>Copy a teacher-made mock up and show an understanding of how it works</li> <li>Explain how a studied process / aspect of a product works</li> </ul>	<b>Evaluate products against a brief</b> <ul style="list-style-type: none"> <li>Evaluate existing products and identify what is good and what could be improved (before)</li> <li>Discuss reasons for any changes to initial design – including why they were needed (after)</li> <li>Identify good features of a product and suggest improvements (after)</li> <li>Evaluate if the product meets the brief (after)</li> <li>Talk about things that other people have made (after)</li> </ul>	<ul style="list-style-type: none"> <li>know how different mechanisms work and why/when they should be used (e.g. levers, sliders)</li> <li>Use sliders and flaps</li> </ul>	Eric Hill, inventor of lift-the-flap books (Spot the Dog)

		Design Knowledge and Skills	Evaluate Knowledge and Skills	Technical Knowledge and Skills	Significant Inventors / Designers
<b>YEAR 2</b>	<b>AUTUMN 1:</b> Mechanisms: Create a London vehicle	<p><u>Y2 Audience is identified for the design.</u></p> <ul style="list-style-type: none"> <li>• Audience is identified for the design.</li> <li>• Know that products should be targeted to a user or audience</li> <li>• Know that a brief identifies a need (Y1) and can be broken down into design criteria which identifies the need it should meet</li> <li>• Know that a design criteria can be solved or met in different ways</li> <li>• Know there are existing products in the wider world which can be used as inspiration for new ideas</li> <li>• use sketches, models and pictures with words to describe designs</li> <li>• add labels to plans</li> <li>• Discuss why they have made a design choice and link this back to the design criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Plans can be adjusted during manufacture for a part that doesn't work (revisit)</li> <li>• Know that how effective a product is is dependent upon how it meets the brief</li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>• Evaluate existing products for how well they were in relation to intended purpose</li> <li>• Evaluate existing products against design criteria set and identify what is good and what could be improved</li> </ul> <p><b>DURING</b></p> <ul style="list-style-type: none"> <li>• Independently help and advice, change part of the design in response to a problem</li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>• Explain how their product works and identify whether they have met the design criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Know how different mechanisms work and why/when they should be used (e.g. levers, sliders, pivots, wheels, axles)</li> </ul> <ul style="list-style-type: none"> <li>• Make simple moving mechanisms using wheels and axles e.g. sliders, levers, wheels</li> </ul>	
	<b>AUTUMN 2:</b> Mini Experience Food: Bread	<ul style="list-style-type: none"> <li>• Audience is identified for the design.</li> <li>• Know that products should be targeted to a user or audience</li> <li>• Know that a brief identifies a need (Y1) and can be broken down into design criteria which identifies the need it should meet</li> </ul>	<ul style="list-style-type: none"> <li>• Plans can be adjusted during manufacture for a part that <b>DURING</b> in response to a problem</li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>• Discuss reasons for any changes to initial design – including why they were needed</li> <li>• Explain how their product works and identify whether they have met the design criteria</li> <li>• Identify successes, improvements and what they have learned</li> </ul>	<ul style="list-style-type: none"> <li>• Know that there are basic hygiene rules that should be followed when preparing food (e.g. hands washed, hair up, apron on, sleeves rolled up)</li> <li>• Measure ingredients using non-standard measurements (cups, spoons, etc)</li> <li>• To mix, stir, cut, pour, shape and spread sieve, slice, squeeze grate and peel.</li> <li>• Follow instructions / set steps of a recipe</li> <li>• Follow hygiene rules</li> <li>• explain hygiene and keep a hygienic kitchen</li> </ul>	
	<b>SPRING 1:</b> Food: Smoothies Project	<ul style="list-style-type: none"> <li>• Audience is identified for the design.</li> <li>• Know that products should be targeted to a user or audience</li> <li>• Know that a brief identifies a need (Y1) and can be broken down into design criteria which identifies the need it should meet</li> <li>• Discuss why they have made a design choice and link this back to the design criteria</li> </ul>	<p><b>Specific to food and nutrition</b></p> <ul style="list-style-type: none"> <li>• Know that food can be evaluated for taste</li> </ul> <ul style="list-style-type: none"> <li>• Plans can be adjusted during manufacture for a part that doesn't work (revisit)</li> <li>• Know that how effective a product is is dependent upon how it meets the brief</li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>• Evaluate existing products for how well they were in relation to intended purpose</li> <li>• Evaluate existing products against design criteria set and identify what is good and what could be improved</li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>• Discuss reasons for any changes to initial design – including why they were needed</li> <li>• Explain how their product works and identify whether they have met the design criteria</li> <li>• Identify successes, improvements and what they have learned</li> </ul>	<ul style="list-style-type: none"> <li>• Know that there are basic hygiene rules that should be followed when preparing food (e.g. hands washed, hair up, apron on, sleeves rolled up)</li> <li>• describe properties of ingredients and importance of varied diet</li> <li>• say where food comes from (Animal, underground etc.)</li> <li>• describe how food is farmed, home-grown, caught</li> <li>• draw eat well plate; explain there are groups of food</li> <li>• describe "five a day"</li> <li>• Cut, peel and grate with increasing confidence</li> <li>• Follow instructions / set steps of a recipe</li> <li>• Follow hygiene rules</li> <li>• explain hygiene and keep a hygienic kitchen</li> </ul>	

<p><b>SUMMER 1 :</b> Materials: Mini Greenhouses (building on Science from Sp2)</p>	<ul style="list-style-type: none"> <li>• Audience is identified for the design.</li> <li>• Know that products should be targeted to a user or audience</li> <li>• Know that a brief identifies a need (Y1) and can be broken down into design criteria which identifies the need it should meet</li> <li>• Know that a design or plan can be enhanced by generating more than one idea <ul style="list-style-type: none"> <li>• Know that different materials have different scientific properties which make some more suitable than others to meet a brief</li> <li>• Know there are existing products in the wider world which can be used as inspiration for new ideas</li> </ul> </li> <li>• use sketches, models and pictures with words to describe designs</li> <li>• add labels to plans</li> <li>• Discuss why they have made a design choice and link this back to the design criteria</li> <li>• Identify how materials with different scientific properties have been used to meet the design criteria (can be verbal)</li> <li>• Label their plans with materials needed (and properties)</li> <li>• choose best tools and materials, and explain choices</li> <li>• Identify techniques for joining</li> </ul>	<ul style="list-style-type: none"> <li>• Plans can be adjusted during manufacture for a part that doesn't work (revisit)</li> <li>• Know that how effective a product is is dependent upon how it meets the brief</li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>• Evaluate existing products for how well they were in relation to intended purpose</li> <li>• Evaluate existing products against design criteria set and identify what is good and what could be improved</li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>• Discuss reasons for any changes to initial design – including why they were needed</li> </ul>	<ul style="list-style-type: none"> <li>• Know that there are some techniques that can reinforce materials (how to make materials stronger, stiffer and more stable) e.g. folding, layering, joining and rolling</li> <li>• describe some different characteristics of materials in relation to properties of materials (linked to Science learning)</li> <li>• Choose suitable materials and explain choices depending on characteristics.</li> <li>• measure materials</li> <li>• join materials in different ways</li> <li>• use own ideas and techniques such as joining, rolling or folding</li> <li>• to reinforce a product and make it stronger</li> <li>• Handle tools safely</li> <li>• Describe which tools I'm using and why</li> </ul>	
<p><b>SUMMER 2:</b> Textiles: Potential mini project</p>	<ul style="list-style-type: none"> <li>• Audience is identified for the design.</li> <li>• Know that products should be targeted to a user or audience</li> <li>• Know that a brief identifies a need (Y1) and can be broken down into design criteria which identifies the need it should meet</li> <li>• Know that a design criteria can be solved or met in different ways</li> <li>• Know that a design or plan can be enhanced by generating more than one idea</li> <li>• identify a target group and the need for the design</li> <li>• use sketches, models and pictures with words to describe designs</li> <li>• add labels to plans</li> <li>• Discuss why they have made a design choice and link this back to the design criteria</li> <li>• choose best tools and materials, and explain choices</li> <li>• Identify techniques for joining</li> </ul>	<p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>• Evaluate existing products for how well they were in relation to intended purpose</li> </ul> <p><b>DURING</b></p> <ul style="list-style-type: none"> <li>• Independently help and advice, change part of the design in response to a problem</li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>• Discuss reasons for any changes to initial design – including why they were needed</li> <li>• Explain how their product works and identify whether they have met the design criteria</li> <li>• Identify successes, improvements and what they have learned</li> </ul>	<ul style="list-style-type: none"> <li>• Know that a 3D textile structure can be made from two identical fabric shapes.</li> <li>• Know what a running stitch is</li> <li>• Know how to handle needles and pins safely</li> <li>• Explain choices of textile</li> <li>• Measure textiles</li> <li>• Carefully cut textiles to produce accurate pieces</li> <li>• With support, thread a needle</li> <li>• Use pins to secure two pieces of fabric</li> <li>• Sew a simple running stitch and use this to join two pieces of fabric</li> </ul>	

		<b>Design Knowledge and Skills</b>  <u>Y3 Audience is specified through a brief.</u>	<b>Evaluate Knowledge and Skills</b>	<b>Technical Knowledge and Skills</b>	<b>Significant Inventors / Designers</b>
YEAR 3	<b>Autumn 1</b> <b>Materials and Structure: Build a bridge</b>	<ul style="list-style-type: none"> <li>Know that a brief identifies a need (Y1) and can be broken down into design criteria which identifies the need it should meet (Y2) and <b>know that the audience should be identified in the design criteria</b></li> <li><b>Know that different materials have different scientific properties</b> and materials should be evaluated to decide which meets the brief best.</li> <li><b>Know that more than one idea should be evaluated to decide which would meet the brief the best</b> before manufacturing.</li> <li>Know that a product's ability to meet the brief is based on a balance between function and appearance.</li> <li><b>Annotate and label their plan with materials chosen and their properties including why they have made certain choices.</b></li> <li>Label design with mechanisms and moving parts.</li> <li>Research different design ideas and collect examples</li> <li>Evaluate existing designs from the wider world to identify strengths and improvements which can be made</li> </ul>	<ul style="list-style-type: none"> <li>Know that how effective a product is depends on how well it meets the brief <i>revisit</i></li> <li>That existing products all have good and bad points (flaws) and meet some parts of the design criteria better than others.</li> <li>Begin to understand by whom, when and where products were designed.</li> <li>Learn about some <b>inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products</b></li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>Evaluate existing products for how well they work in relation to their intended purpose and <b>against the design criteria revisit</b></li> <li><b>Identify flaws in designs of existing products</b></li> <li>Identify the work of relevant designers / inventors in the creation of the original product</li> <li>Consider the views of others to improve their work</li> </ul> <p><b>DURING</b></p> <ul style="list-style-type: none"> <li><b>Consider different options when attempting to solve a problem in manufacture</b></li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>Explain how their product works and (Y2) <b>evaluate how well their product meets the overall design criteria, using this to identify strengths and improvements.</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Know</b> tools need to be handled safely.</li> <li><b>Know</b> that there are some techniques that can reinforce materials (how to make materials stronger, stiffer and more stable) such as layering and folding (Y1&amp;2) <b>using reinforcing strips and triangles</b></li> <li><b>Fold on a line, create valley and hill folds</b></li> <li>Use appropriate materials considering the intended use of the product</li> <li>Work accurately to make cuts and holes</li> <li><b>Measure carefully to avoid mistakes</b></li> <li>Join materials in a variety of ways, considering the intended purpose of the project</li> <li><b>Add reinforcements to joins to create a stronger structure</b> (e.g. cardboard corner triangles for frames)</li> </ul>	Isambard Kingdom Brunel
	<b>Spring 1</b> <b>Mechanisms: create a lever system that the Egyptians could have used to help build pyramids</b>	<ul style="list-style-type: none"> <li><b>Know that more than one idea should be evaluated to decide which would meet the brief the best</b> before manufacturing.</li> <li>Know that a product's ability to meet the brief is based on a balance between function and appearance.</li> <li><b>Annotate and label their plan with materials chosen and their properties including why they have made certain choices.</b></li> <li>Label design with mechanisms and moving parts.</li> <li><b>Independent break a brief down into design criteria</b></li> <li><b>Establish a success criteria which includes function and appearance</b></li> <li>Explain how a process or aspect of a product works</li> <li>Evaluate existing designs from the wider world to identify strengths and improvements which can be made</li> <li>Use an existing template to create their own template</li> <li>Plan the use of tabs to aid joining</li> </ul>	<ul style="list-style-type: none"> <li>Know that how effective a product is depends on how well it meets the brief <i>revisit</i></li> <li>Learn about some <b>inventors/designers/ engineers/chefs/ manufacturers of ground-breaking products</b></li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>Evaluate existing products for how well they work in relation to their intended purpose and <b>against the design criteria revisit</b></li> <li><b>Identify flaws in designs of existing products</b></li> <li>Identify the work of relevant designers / inventors in the creation of the original product</li> </ul> <p><b>DURING</b></p> <ul style="list-style-type: none"> <li><b>Consider different options when attempting to solve a problem in manufacture</b></li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>Explain how their product works and (Y2) <b>evaluate how well their product meets the overall design criteria, using this to identify strengths and improvements.</b></li> </ul>	<ul style="list-style-type: none"> <li>Know how different mechanisms work and why/when they should be used (e.g. levers, sliders, wheels, axles, <b>pivots, pneumatics, linkages and hinges</b>)</li> <li>use simple lever and linkages to create movement</li> <li>use pneumatics to create movement</li> <li>select appropriate tools / techniques, considering which is the most appropriate</li> </ul>	The Egyptian civilisation
	<b>Summer 2</b> <b>Food: Greek Mezze</b> <b>Create flatbreads, Greek Salad and Skewers</b>	<ul style="list-style-type: none"> <li>Know that a brief identifies a need (Y1) and can be broken down into design criteria which identifies the need it should meet (Y2) and <b>know that the audience should be identified in the design criteria</b></li> <li>Know that a product's ability to meet the brief is based on a balance between function and appearance.</li> <li>Identify specific use and audience</li> <li><b>Establish a success criteria which includes function and appearance</b></li> <li>Research different design ideas and collect examples</li> </ul>	<p><b>Specific to food and nutrition</b></p> <ul style="list-style-type: none"> <li>Know that food can be evaluated for taste <b>appearance, smell and nutritional value</b></li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>Evaluate existing products for how well they work in relation to their intended purpose and <b>against the design criteria revisit</b></li> <li><b>Identify flaws in designs of existing products</b></li> <li>Consider the views of others to improve their work</li> </ul> <p><b>DURING</b></p> <ul style="list-style-type: none"> <li>Consider the views of others to improve their work</li> </ul> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>Evaluate their finished products for overall functionality and appearance (cooking: appearance, smell and nutritional value).</li> </ul>	<ul style="list-style-type: none"> <li>Know that there are basic hygiene rules that should be followed when preparing food (e.g. hands washed, hair up, apron on, sleeves rolled up)</li> <li>Know that raw food sometimes has additional hygiene rules linked to food preparation (e.g. raw meat) NB: raw meat does not have to be included in recipes to teach this.</li> <li>describe how a healthy diet involves a variety/balance of food/drinks</li> <li>explain how food and drink are needed for active/healthy bodies.</li> <li>Work through a plan in order</li> <li><b>Measure ingredients using standard (e.g. weight and ml) and non-standard measurements (cups, spoons, etc) (EYFS-Y2)</b></li> <li><b>To mix, stir, cut, pour, shape and spread (EYFS) sieve, slice, squeeze grate, peel, roll,</b></li> <li><b>Follow hygiene rules</b></li> <li><b>Follow (Y1&amp;2) and adapt a recipe with consideration to nutrition, taste and presentation</b></li> <li>carefully select ingredients, thinking about the audience and purpose of the product</li> <li>make product look attractive</li> <li>think about how to grow plants to use in cooking begin to understand food comes from UK and wider world</li> <li>grow in confidence using some of the following techniques; peeling, chopping, slicing, grating, mixing, spreading, kneading and baking</li> </ul>	

		<b>Design Knowledge and Skills</b>  <i>Y4 Audience is specified through a brief.</i>	<b>Evaluate Knowledge and Skills</b>	<b>Technical Knowledge and Skills</b>	<b>Significant Inventors / Designers</b>
YEAR 4	Autumn 2 Food: Gingerbread Projects	<ul style="list-style-type: none"> <li>That a brief identifies a need for an audience or user and can be broken down into design criteria, which identifies the needs the design should meet</li> <li>That designs should be evaluated against the design criteria</li> <li>That more than one idea should be evaluated to decide which would meet the brief best before moving into manufacture. That function and appearance, availability of resources, time available and skill level should be taken into account when choosing the final design and manufacturing process</li> <li>Develop multiple design ideas and make a final choice on a design based on its meeting of the design brief (Y3) an understanding of their own skills (Y2-3) and the time and resources available.</li> <li>To be able to establish criteria for a successful product (Y3) factoring in their own skill level and functionality Vs appearance</li> </ul> <p><b>Specific to cooking and nutrition</b> Plan a sequence of actions to make a product (cooking) write a recipe</p>	<p><b>Specific to food and nutrition</b></p> <ul style="list-style-type: none"> <li>Know that food can be evaluated for taste appearance, smell and nutritional value</li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>Consider the views of others to improve their work</li> </ul> <p><b>DURING</b> Consider different options when attempting to solve a problem in manufacture (Y3) identifying which solution will work best and why</p> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>Evaluate how well their product meets each part of the design criteria, using this to identify strengths and improvements in both the design and manufacture stage</li> </ul>	<ul style="list-style-type: none"> <li>Know that there are basic hygiene rules that should be followed when preparing food (e.g. hands washed, hair up, apron on, sleeves rolled up)</li> <li>Know that raw food sometimes has additional hygiene rules linked to food preparation (e.g. raw meat) NB: raw meat does not have to be included in recipes to teach this.</li> <li>Know that food can be cooked in a variety of ways, but a heat source is always required.</li> <li>understand ingredients can be fresh, pre-cooked or processed</li> <li>begin to understand about food being grown, reared or caught in the UK or wider world</li> <li>explain importance of food and drink for active, healthy bodies</li> <li>Follow and adapt a recipe with consideration to nutrition, taste and presentation</li> <li>use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking</li> <li>Measure ingredients using standard (e.g. weight and ml) and non-standard measurements (cups, spoons, etc) (EYFS-Y2)</li> <li>To mix, stir, cut, pour, shape and spread (EYFS) sieve, slice, squeeze grate, peel, roll,</li> <li>Follow hygiene rules</li> <li>Present the product in interesting/ attractive ways</li> </ul>	
	Spring 2 Textiles: Cross Stitch Bookmark	<ul style="list-style-type: none"> <li>That the use / user of a product will affect design choices e.g. a smaller cushion for children</li> <li>That designs should be evaluated against the design criteria</li> <li>That a product's ability to meet a brief is based on a balance between function and appearance</li> <li>That we can get ideas about how to design and make something by looking at examples (EYFS) That there are existing products in the wider world that can be used as a source of inspiration for new designs (Y3)</li> <li>Develop multiple design ideas and make a final choice on a design based on its meeting of the design brief (Y3) an understanding of their own skills (Y2-3) and the time and resources available.</li> <li>Annotate and label their plan with materials chosen and their properties including justifying why they have made the choices they have</li> <li>To be able to establish criteria for a successful product (Y3) f</li> <li>Research different design ideas e.g. internet or text books to collect examples</li> <li>Factor in seam allowances to textile designs</li> <li>Create their own templates and patterns</li> </ul>	<ul style="list-style-type: none"> <li>Discuss by whom, when and where products were designed</li> <li>Know about some inventors/designers/engineers/chefs/manufacturers of ground-breaking products</li> <li>Research whether products can be recycled or reused</li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>Identify the work of relevant designers / inventors in the creation of the original product (different designer to Y3)</li> </ul> <p><b>DURING</b> Consider different options when attempting to solve a problem in manufacture (Y3) identifying which solution will work best and why</p> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>Evaluate how well their product meets each part of the design criteria, using this to identify strengths and improvements in both the design and manufacture stage</li> </ul>	<ul style="list-style-type: none"> <li>Know that there are different types of stitches and each technique has advantages and disadvantages that should be taken into account when choosing which to use, which affects when they should be used (e.g. overstitch, running stitch, blanket stitch)</li> <li>understand that a simple fabric shape can be used to make a 3D textiles project</li> <li>Devise a simple template</li> <li>Choose textiles considering appearance and functionality</li> <li>Thread a needle</li> <li>Sew a simple running stitch</li> <li>join different textiles in different ways including backstitch and blanket stitch</li> <li>Use one type of stitch to join two pieces of material</li> <li>Think about how to make product strong</li> <li>explain how to join things in a different way</li> <li>Use a cross stitch for embroidery</li> </ul>	Barthélemy Thimonnier, inventor of first sewing machine
	Summer 2 Electrical Systems: Light up Signs	<ul style="list-style-type: none"> <li>That different materials have different scientific properties which make some more suitable than others to fulfil a brief including electrical systems</li> <li>Annotate and label their plan with materials chosen and their properties including justifying why they have made the choices they have</li> <li>Research different design ideas e.g. internet or text books to collect examples</li> <li>Explain how a product works (different to Y1-3) and incorporate this into their design choices e.g. look at different levers and pulleys, or different types of stitches and decide which is best to meet the needs of their design</li> </ul>	<ul style="list-style-type: none"> <li>Discuss by whom, when and where products were designed</li> <li>Know about some inventors/designers/engineers/chefs/manufacturers of ground-breaking products</li> <li>Research whether products can be recycled or reused</li> </ul> <p><b>BEFORE</b></p> <ul style="list-style-type: none"> <li>Evaluate the extent to which existing products meet their intended purpose and against the design criteria revisit</li> </ul> <p><b>DURING</b> Consider different options when attempting to solve a problem in manufacture (Y3) identifying which solution will work best and why</p> <p><b>AFTER</b></p> <ul style="list-style-type: none"> <li>Evaluate how well their product meets each part of the design criteria, using this to identify strengths and improvements in both the design and manufacture stage</li> </ul>	<ul style="list-style-type: none"> <li>Know that a computer program can be used to control product linked to coding in computing</li> <li>Use a simple circuit in a product</li> <li>incorporate switch into product</li> </ul> <p><i>Link to other technical skills and making skills from the progression</i></p>	Garratt Morgan – 3 Light Traffic Light

		<b>Design Knowledge and Skills</b>  <u>Y5 Specific audience is specified through a brief.</u>	<b>Evaluate Knowledge and Skills</b>	<b>Technical Knowledge and Skills</b>	<b>Significant Inventors / Designers</b>
<b>YEAR 5</b>	<b>Autumn 1</b> Mini Experience Food: Chilli	<ul style="list-style-type: none"> <li>That a brief identifies a need for a <b>specific</b> audience or user and can be broken down into design criteria, which identifies the needs the design should meet</li> <li>That a product should be designed with the <b>specific audience/user in mind</b></li> <li>To know where food they are consuming comes from</li> <li>That different foods are grown, caught, reared and processed in different ways e.g. organic, farmed, wild, reared caged/uncaged, organic, processed / unprocessed</li> <li>That locally produced food has a lower carbon footprint and that meat farming produces carbon dioxide</li> <li>That some ingredients in products that have a higher carbon footprint or lower sustainability and health benefits e.g. palm oil, high sugar</li> <li>That there are some common allergies e.g. nuts, egg, wheat, gluten that sometimes need to be factored into a design process</li> <li>Plan a sequence of actions to make a product, write a recipe <b>adapt an existing recipe</b> to change the taste, texture, appearance or smell.</li> </ul>	<ul style="list-style-type: none"> <li><b>Specific to food and nutrition</b></li> <li><b>For food to be appealing it needs to balance the senses: food can be evaluated for, appearance, smell, taste, nutritional value (Y1-4) and balance (sweet, sour, salty, bitter, spicy)</b></li> <li><b>BEFORE</b></li> <li>Investigate how much products <b>cost to make and how innovative products are in meeting the user's needs.</b></li> <li><b>DURING</b></li> <li>Evaluate the manufacture against the design as part of a planned evaluation time (mid project review) and use this to make adjustments to the plan/manufacture as required. <b>AFTER</b></li> <li><b>Evaluate their products for overall appeal: functionality, appearance, cost, footprint and sustainability (in cooking seasonality and cost to health)</b></li> <li>Collect and respond to the views of others when evaluating their product</li> </ul>	<ul style="list-style-type: none"> <li>Know that there are basic hygiene rules that should be followed when preparing food including the handling of raw foods (EYFS-Y4)</li> <li>That food can be cooked in a variety of ways (bake Y3&amp;4) <b>boil, sauté, fry, steam</b></li> <li>Understand the need for correct storage of different types of food</li> <li>Understand and know that garnishes can make food more attractive</li> <li><b>Discuss their own lifestyle choices and the impact this has on their health (Science living things link)</b></li> <li>Write and adapt an existing recipe to change the taste, texture, appearance or smell that takes into account the seasonality</li> <li>present product well - interesting, attractive, fit for purpose</li> <li>explain how there are different substances in food / drink needed for health</li> <li>begin to understand seasonality of foods</li> <li>understand food can be grown, reared or caught in the UK and the wider world</li> <li>Measure ingredients using standard (e.g. weight and ml) and non-standard measurements (cups, spoons, etc) (EYFS-Y2)</li> <li>To mix, stir, cut, pour, shape and spread (EYFS) sieve, slice, squeeze grate, peel, roll,</li> <li>Follow hygiene rules</li> <li>Follow (Y1&amp;2) and adapt a recipe with consideration to nutrition, taste and presentation</li> <li>Measure ingredients <b>accurately</b> using standard (e.g. weight and ml) and non-standard measurements (cups, spoons, etc) (EYFS-Y4)</li> <li>To mix, stir, cut, pour, shape and spread (EYFS) sieve, slice, squeeze grate, peel, roll, dice,</li> <li><b>To use different cooking techniques e.g. bake, boil and sauté</b></li> <li>Follow hygiene rules in preparing food e.g. washing hands, handling and preparing raw meat</li> <li>Follow and adapt a recipe to improve nutrition or appeal and to change the appearance, texture or balance the taste (e.g. sweet, salty, bitter, spicy)</li> </ul>	
	<b>Autumn 2</b> Materials: Rockets Autumn 2	<ul style="list-style-type: none"> <li>That more than one idea should be evaluated to decide which would meet the brief best before moving into manufacture. That function and appeal, availability of resources, time available, cost, footprint and sustainability should be taken into account when choosing the final design (in cooking seasonality and cost to health)</li> <li>That the longevity of some materials/mechanisms can be increased through reinforcing, stiffening and strengthening techniques.</li> <li><b>Interpret a brief into a detailed design criteria, understanding that some parts of the criteria are higher priority than others and may work against each other e.g. cost Vs availability/sustainability</b></li> <li>To develop multiple design ideas and make a final choice on a design based on its meeting of the design brief (Y3) an understanding of their own skills (Y2-3), time and resources available, cost, sustainability, footprint, (seasonality and health in cooking).</li> <li>Annotate and label their plan with materials chosen and their properties (Y2) including labelling specific mechanisms or working parts (Y3) <b>using computers to increase quality or clarity of design</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Talk about some key inventors, inventors/designers/ engineers/chefs/ manufacturers of groundbreaking products</b></li> <li><b>BEFORE</b></li> <li>Identify the work of relevant designers / inventors in the creation of the original product and use this to influence their work</li> <li><b>DURING</b></li> <li>Consider different options when attempting to solve a problem in manufacture identifying which solution will work best and why</li> <li><b>Identify the impact that each change will have on the ability to meet the design criteria</b></li> <li>Evaluate the manufacture against the design as part of a planned evaluation time (mid project review) and use this to make adjustments to the plan/manufacture as required</li> <li><b>AFTER</b></li> <li>Explain how their product works and evaluate how well their product meets each part of the design criteria, using this to identify strengths and improvements in both the manufacture and the design stage</li> <li><b>Evaluate their products for overall appeal: functionality, appearance, cost, footprint and sustainability (in cooking seasonality and cost to health)</b></li> <li>Collect and respond to the views of others when evaluating their product</li> </ul>	<ul style="list-style-type: none"> <li><b>Know that for some materials, some adhesives are more effective than others</b></li> <li><b>Know</b> that materials can be joined together in different ways e.g. glue, staple, pin (EYFS-Y2) sewing (Y3&amp;4).</li> <li><b>Know</b> tools need to be handled safely. <b>Focus on those not previously covered e.g. saws, strong adhesives, wood glue, fabric glue, craft knives / craft scissors, pliers and wire cutters to cut and mould wire</b></li> <li>Add reinforcements to joints to create a stronger structure (e.g. cardboard corner triangles for frames) to ensure the product is fit for purpose</li> <li>Select materials carefully, considering intended use of the product, the aesthetics and functionality.</li> <li>Be resourceful when faced with challenges and problems</li> <li>Measure accurately enough to ensure precision</li> </ul>	Robert Goddard – Physicist
	<b>Spring 2</b> Textiles: Bags for Life Save the Planet	<ul style="list-style-type: none"> <li>That a brief identifies a need for a <b>specific</b> audience or user and can be broken down into design criteria, which identifies the needs the design should meet</li> <li>That a product should be designed with the <b>specific audience/user in mind</b></li> <li>That a products ability to meet a brief is based on a balance between function and appearance</li> <li>That the appeal of a product is based on ability of a product to fulfil a specified need, functionality, appearance and cost (and sustainability – geography link)</li> <li>Create their own templates and patterns, using computer drawing packages and / or by hand</li> <li>To plan to use techniques to increase the longevity of a product (reinforcing, stiffening and strengthening techniques) and record this in an annotated design.</li> </ul>	<ul style="list-style-type: none"> <li><b>BEFORE</b></li> <li>Evaluate the extent to which existing products meet their intended purpose</li> <li><b>Investigate how much products cost to make and how innovative products are in meeting the user's needs.</b></li> <li>Investigate the sustainability of materials used in existing products and whether this creates a flaw or appeal</li> <li><b>DURING</b></li> <li>Consider different options when attempting to solve a problem in manufacture identifying which solution will work best and why</li> <li><b>Identify the impact that each change will have on the ability to meet the design criteria</b></li> <li>Evaluate the manufacture against the design as part of a planned evaluation time (mid project review) and use this to make adjustments to the plan/manufacture as required</li> <li><b>AFTER</b></li> <li>Explain how their product works and evaluate how well their product meets each part of the design criteria, using this to identify strengths and improvements in both the manufacture and the design stage</li> <li><b>Evaluate their products for overall appeal: functionality, appearance, cost, footprint and sustainability (in cooking seasonality and cost to health)</b></li> <li>Collect and respond to the views of others when evaluating their product</li> </ul>	<ul style="list-style-type: none"> <li><b>Know</b> that there are different types of stitches and each technique has advantages and disadvantages that should be taken into account when choosing which to use, which affects when they should be used (e.g. over stitch, running stitch, blanket stitch)</li> <li>understand that a simple fabric shape can be used to make a 3D textiles project</li> <li><b>Think about user's wants/needs and aesthetics when choosing textiles</b></li> <li><b>Create and use own template</b></li> <li>Create, follow and adapt detailed step-by-step plans</li> <li>Make a prototype</li> <li>think about how to make product strong and attractive</li> <li>use a range of joining techniques</li> <li>Use the technique of scoring when folding thicker materials</li> <li>Use a variety of stitches over stitch, running stitch, blanket stitch to securely join two pieces of material</li> <li>Develop techniques for adding decorative details</li> <li>Apply decoration using needle and thread: buttons, sequins.</li> </ul>	

	<p><b>Summer 2</b>  <b>Mechanisms:</b>  <b>TBC – link to</b>  <b>Science obj</b></p>	<ul style="list-style-type: none"> <li>• That more than one idea should be evaluated to decide which would meet the brief best before moving into manufacture. That function and appeal, availability of resources, time available, cost, footprint and sustainability should be taken into account when choosing the final design (in cooking seasonally and cost to health)</li> <li>• That the longevity of some materials/mechanisms can be increased through reinforcing, stiffening and strengthening techniques.</li> <li>• <b>Interpret a brief into a detailed design criteria, understanding that some parts of the criteria are higher priority than others and may work against each other e.g. cost Vs availability/sustainability</b></li> <li>• To develop multiple design ideas and make a final choice on a design based on its meeting of the design brief (Y3) an understanding of their own skills (Y2-3), time and resources available, cost, sustainability, footprint, (seasonality and health in cooking).</li> <li>• Annotate and label their plan with materials chosen and their properties (Y2) including labelling specific mechanisms or working parts (Y3) <b>using computers to increase quality or clarity of design</b></li> <li>• Justify their choices of materials using scientific knowledge of their properties and suitability (Y2), and limitations such as time and availability and sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• <b>DURING</b></li> <li>• Consider different options when attempting to solve a problem in manufacture identifying which solution will work best and why</li> <li>• <b>Identify the impact that each change will have on the ability to meet the design criteria</b></li> <li>• Evaluate the manufacture against the design as part of a planned evaluation time (mid project review) and use this to make adjustments to the plan/manufacture as required</li> </ul>	<ul style="list-style-type: none"> <li>• use selected tools/equipment with good level of precision * produce suitable lists of tools, equipment/materials needed</li> <li>• *select appropriate materials, fit for purpose; explain choices, considering functionality</li> <li>• create and follow detailed step by-step plan</li> <li>• explain how product will appeal to an audience</li> <li>• mainly accurately measure, mark out, cut and shape materials/components</li> <li>• *mainly accurately assemble, join and combine</li> <li>• materials/components</li> <li>• mainly accurately apply a range of finishing techniques</li> <li>• use techniques that involve a small number of steps</li> <li>• begin to be resourceful with practical problems</li> </ul>	
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		<b>Design Knowledge and Skills</b>  <i>Y6 Audience is selected through market research.</i>	<b>Evaluate Knowledge and Skills</b>	<b>Technical Knowledge and Skills</b>	<b>Significant Inventors / Designers</b>
YEAR 6	<b>AUTUMN 1</b> Food: Healthy Seasonal Meal Plan for an Athlete	<ul style="list-style-type: none"> <li>That a brief identifies a need for a specific audience or user (Y5) and can be broken down into design criteria, which identifies the needs the design should meet (Y1-4)</li> <li>That a product should be designed with the specific audience/user in mind (Y5)</li> <li>That more than one idea should be evaluated to decide which would meet the brief best before moving into manufacture. That function and appeal, availability of resources, time available, cost and sustainability should be taken into account when choosing the final design (Y3-5)</li> <li>That the appeal of a product is based on ability of a product to fulfil a specified need, appearance and cost (Y5)</li> <li><b>Specific to cooking and nutrition</b></li> <li>That different foods are grown, caught, reared and processed in different ways e.g. organic, farmed, wild, reared caged/uncaged, organic, processed / unprocessed (Y5)</li> <li>That seasons and climate affect food growth, but that some products are grown out of natural climates to increase yield.</li> <li>That different foods are grown at different times of the year, this means they are more readily available; seasonality</li> <li>Know the appropriate portion sizes for children and adults (link to geography and waste and over consumption of resources)</li> <li>Write and adapt an existing recipe to change the taste, texture, appearance or smell that takes into account the seasonality or availability of local produce and production of minimal waste (link Geography and sustainability)</li> <li>Discuss their own lifestyle choices and the impact this has on their health (Science living things link)</li> </ul>	<ul style="list-style-type: none"> <li>Discuss about some key inventors, <b>inventors/designers/ engineers/chefs/ manufacturers</b> of groundbreaking products</li> <li>To know how technology has developed over time and how this has changed people's way of life (History link)</li> <li><b>Specific to food and nutrition</b></li> <li>For food to be appealing it needs to balance the senses: food can be evaluated for, appearance, smell, taste, nutritional value (Y1-4) and balance (sweet, sour, salty, bitter, spicy)</li> <li>Evaluate the extent to which existing products meet their intended purpose (Y2-4) including cost, innovation and sustainability</li> <li>Collect and use the views of others to shape the manufacture process</li> <li>To be able to give balanced feedback to others about their product including strengths in meeting the design criteria and improvements that could be made</li> <li>Evaluate their product in terms of its overall appeal, factoring in: cost and sustainability of materials, longevity, appearance, and whether it addresses previously identified design flaws in existing products. (cooking: taste and balance, cost, availability sustainability, health and nutrition)</li> </ul>	<ul style="list-style-type: none"> <li>Know there are basic hygiene rules that should be followed when preparing food including the handling of raw foods (EYFS-Y4)</li> <li>Write and adapt an existing recipe to change the taste, texture, appearance or smell that takes into account the seasonality or availability of local produce and production of minimal waste (link Geography and sustainability)</li> <li>explain seasonality of foods</li> <li>learn about food processing methods</li> <li>name some types of food that are grown, reared or caught in the UK or wider world</li> <li>describe some of the different substances in food and drink, and how they can affect health</li> <li>Use ratios to adjust quantities of recipes</li> </ul>	
	<b>SPRING 1</b> Electrical Systems (Materials): TinkerCAD alarmed bunker	<ul style="list-style-type: none"> <li>That <b>prototypes</b> can be used to give an indication of how successful the design will be at the manufacturing stage.</li> <li>Interpret a brief into a detailed design criterion, understanding that some parts of the criteria are higher priority than others and may work against each other e.g. cost Vs availability/sustainability (Y5)</li> <li>Research different design ideas e.g. internet or text books to collect examples identifying the pro and cons of each design, using this to inform and refine their own design (Y5)</li> <li>Demonstrate an understanding of how developments in design and technology or specific inventions have had an impact on the wider world</li> <li>Design more complex structures</li> </ul>	<ul style="list-style-type: none"> <li>Identify some of the people who are responsible for significant technological advancements</li> <li>Identify how the product they are studying has brought about changes in the world (both good and bad)</li> <li>Consider different options when attempting to solve a problem in manufacture (Y3) identifying the impact that each change will have on the ability to meet the design criteria (Y5)</li> <li>Engage in constant review against design criteria during the manufacture of the product</li> </ul>	<ul style="list-style-type: none"> <li>use different types of circuit in product (simple, series)</li> <li>understand and use a range of components in a circuit including, lights and buzzers</li> <li>incorporate switch into product</li> <li>Apply their understanding of computing to program, monitor and control their products</li> </ul>	Marie Van Brittan Brown: Home Security Systems
	<b>SUMMER 1</b> Mechanisms: Post SATs Create a moving scene from your favourite book using cams and followers	<ul style="list-style-type: none"> <li>That designs should be evaluated against the design criteria and the success of prototypes made</li> <li>That market research can be conducted to gain a better understanding of the factors that influence the needs of the specific user, this should be incorporated into a design.</li> <li>Develop multiple design ideas and make a final choice on a design based on its meeting of the design brief (Y3) an understanding of their own skills (Y2-3), time and resources available, cost, sustainability, footprint, seasonality and health in cooking (Y5) and the success of prototypes</li> <li>To plan to use techniques to increase the longevity of a product (reinforcing, stiffening and strengthening techniques) and record this in an annotated design.</li> <li>Annotate and label their plan with materials chosen and their properties (Y2) including labelling specific mechanisms or working parts (Y3) using cross sectional and exploded diagrams to show specific parts of the design.</li> <li>Justify their choices of materials using scientific knowledge of their properties and suitability (Y2), and limitations such as time, availability, sustainability, cost and footprint (Y5)</li> <li>That the longevity of some materials/mechanisms can be increased through reinforcing, stiffening and strengthening techniques (Y5).</li> <li>That cross section and exploded diagrams are a way of demonstrating how part of a product will work</li> <li>Create prototypes and use the success of these to influence the final design</li> </ul>	<ul style="list-style-type: none"> <li>Consider different options when attempting to solve a problem in manufacture (Y3) identifying the impact that each change will have on the ability to meet the design criteria (Y5)</li> <li>Engage in constant review against design criteria during the manufacture of the product</li> <li>To be able to give balanced feedback to others about their product including strengths in meeting the design criteria and improvements that could be made</li> <li>Evaluate their product in terms of its overall appeal, factoring in: cost and sustainability of materials, longevity, appearance, and whether it addresses previously identified design flaws in existing products. (cooking: taste and balance, cost, availability sustainability, health and nutrition)</li> </ul>	<ul style="list-style-type: none"> <li>Know how different mechanisms work and why/when they should be used (e.g. levers, sliders, wheels, axles, pivots, pneumatics, linkages and hinges gears, pulleys, cams)</li> <li>Make something move using cams, axles and / or electric circuits (e.g. using motors)</li> <li>Create, follow and adapt detailed step-by-step plans</li> <li>Incorporate hydraulics and pneumatics</li> <li>use cams, pulleys and gears to create movement</li> <li>refine product after testing, considering aesthetics, functionality and purpose</li> </ul>	