

Branton St-Wilfrid's C of E Primary - Design and Technology Whole school map

INTENT

At Branton St. Wilfrid's, we believe that Design and Technology is an inspiring, rigorous, and practical subject. We want our pupils to use their creativity and imagination, to design and make authentic products that solve real and relevant problems within a variety of contexts, considering the user's purpose and function. Our Design & Technology curriculum is constructed to inspire children to think innovatively, inquisitively and to become risk takers. We provide varied learning opportunities which aim to develop not only children's technical skill in design & technology but also to develop their wider knowledge of product design and their ability to apply vocabulary accurately.

It is our intention that pupils will achieve by acquiring appropriate subject knowledge, skills and understanding of Design and Technology as set out in the National Curriculum, alongside other disciplines such as Mathematics, Science, Engineering, Computing, and Art. Children learn to be reflective, enterprising and resilient.

Through the evaluation of past and present Design and Technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality Design and Technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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Projects	<p>Free Standing Structures To design and house for the Three Little Pigs</p> <p>Enterprise Mechanisms – Sliders and Levers Moving Pictures</p> <p>Food – Preparing fruit and Vegetables – To make porridge for Goldilocks</p> <p>Topic: Under the Sea Free Standing Structures To design and make an aquarium</p> <p>Topic: Keeping Healthy Keeping Safe Food – Preparing fruit and Vegetables – Fruit Salad</p> <p>Topic: Growth Textiles (Templates and Joining Techniques) Weaving</p>		<p>Enterprise Mechanisms (Sliders and Levers) To design and make a moving story</p> <p>Topic: Keeping Healthy Keeping Safe Food – To design and make a fruit salad</p> <p>Free Standing Structures To design and make playground equipment</p>		<p>Topic: GFOL Food (varied and balanced diet) To design and make a flavoured bread</p> <p>Enterprise Textiles (Templates and Joining Techniques)</p> <p>Topic: DT Challenge Mechanisms Wheels and Axles To design and make a vehicle</p>		<p>Topic: Enterprise Textiles (2D to 3D product)</p> <p>Topic: Keeping Healthy Keeping Safe Food (Healthy and varied diet) To make a sandwich</p> <p>Topic: DT Challenge Mechanisms (levers and linkages) To design and make a card</p>		<p>Topic: Enterprise Shell Structures To design and make packaging for chocolate CAD Electrical Systems To design and make a nightlight</p> <p>Topic: Keeping Healthy Keeping Safe Food (Healthy and varied diet) To adapt a biscuit recipe</p> <p>Topic: DT Challenge Mechanisms (Pneumatics) To</p>		<p>Topic: Enterprise Textiles (combining different fabric shapes) Christmas decoration CAD</p> <p>Topic: Food Celebrating culture and seasonality To adapt a simple scone recipe</p> <p>Topic: DT Challenge Mechanisms (pulleys) To design and make a pulley system</p>		<p>Topic: Enterprise Structures (frame structure) To design and make frame</p> <p>Topic: Electricity Electrical Circuits Food Celebrating culture and seasonality To design and make a burger</p> <p>Topic: DT Challenge Mechanisms (cams) To design and make a moving toy</p>	
	EYFS 3-4 Year Olds Reception ELG	Year One	Year Two	End of KS Expectations	Year Three	Year Four	Year Five	Year Six	End of KS Expectations					
Disciplinary Knowledge														

Design	<p>Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them.</p>	<ul style="list-style-type: none"> * have own ideas * explain what I want to do *explain what my product is for, and how it will work * use pictures and words to plan, begin to use models *Some children may use basic labels in their designs *Design using mock ups * design a product for myself following design criteria *research similar existing products *design explaining basic chronology of steps 	<ul style="list-style-type: none"> * have own ideas and plan what to do next * explain what I want to do and describe how I may do it * explain purpose of product, how it will work and how it will be suitable for the user * describe design using pictures, words, models, diagrams, begin to use ICT * design products for myself and others following design criteria * choose best tools and materials, and explain choices * use knowledge of existing products to produce ideas *design explaining basic chronology of steps 	<p>*Design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>*Generate, develop, model and communicate their ideas through talking, drawing, templates, mockups and, where appropriate, information and communication technology</p>	<ul style="list-style-type: none"> *begin to research others' needs * show design meets a range of requirements * describe purpose of product * follow a given design criteria * have at least one idea about how to create product * create a plan which shows order, equipment and tools *describe design using an accurately labelled sketch and words *begin to design using a cross-sectional diagram * make design decisions *explain how product will work * make a prototype * begin to use computers to show design *design explaining basic chronology of steps 	<ul style="list-style-type: none"> * use research for design ideas * show design meets a range of requirements and is fit for purpose *begin to create own design criteria *have at least one idea about how to create product and suggest improvements for design. * produce a plan and explain it to others *say how realistic plan is. *include an annotated sketch *begin to use exploded diagrams to show design *make and explain design decisions considering availability of resources *explain how product will work * make a prototype *begin to use computers to show design. *design explaining basic chronology of steps 	<ul style="list-style-type: none"> *use internet and questionnaires for research and design ideas *take a user's view into account when designing * begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose *create own design criteria * have a range of ideas *produce a logical, realistic plan and explain it to others. *use cross-sectional planning and annotated sketches * make design decisions considering time and resources. *clearly explain how parts of product will work. *model and refine design ideas by making prototypes and using pattern pieces. *use computer-aided designs *design explaining basic chronology of steps 	<ul style="list-style-type: none"> * draw on market research to inform design * use research of user's individual needs, wants, requirements for design * identify features of design that will appeal to the intended user * create own design criteria and specification * come up with innovative design ideas *follow and refine a logical plan. *use annotated sketches, cross sectional planning and exploded diagrams * make design decisions, considering, resources and cost * clearly explain how parts of design will work, and how they are fit for purpose * independently model and refine design ideas by making prototypes and using pattern pieces * use computer-aided designs *design explaining basic chronology of steps 	<p>*Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups</p> <p>*Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross sectional and exploded diagrams, prototypes, pattern pieces and computer aided design</p>
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<p style="text-align: center;">Make</p>	<p>Join different materials and explore different textures.</p> <p>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</p> <p>Create collaboratively, sharing ideas, resources and skills.</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form, and function;</p> <p>Make use of props and materials when role playing characters in narratives and stories.</p>	<p>*explain what I'm making and why</p> <p>*consider what I need to do next</p> <p>*select tools/equipment to cut, shape, join, finish and explain choices</p> <p>*measure, mark out, cut and shape, with support</p> <p>*choose suitable materials and explain choices</p> <p>*try to use finishing techniques to make product look good</p> <p>*work in a safe and hygienic manner</p>	<p>*explain what I am making and why it fits the purpose</p> <p>*make suggestions as to what I need to do next.</p> <p>*join materials/components together in different ways</p> <p>*measure, mark out, cut and shape materials and components, with support.</p> <p>*describe which tools I'm using and why</p> <p>*choose suitable materials and explain choices depending on characteristics.</p> <p>*use finishing techniques to make product look good</p> <p>*work safely and hygienically</p>	<p>*Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>*Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p>	<p>*select suitable tools/equipment, explain choices; begin to use them accurately</p> <p>* select appropriate materials, fit for purpose.</p> <p>* work through plan in order</p> <p>*consider how good product will be</p> <p>* begin to measure, mark out, cut and shape materials/components with some accuracy</p> <p>* begin to assemble, join and combine materials and components with some accuracy</p> <p>* begin to apply a range of finishing techniques with some accuracy</p>	<p>* select suitable tools and equipment, explain choices in relation to required techniques and use accurately</p> <p>*select appropriate materials, fit for purpose; explain choices</p> <p>* work through plan in order.</p> <p>* realise if product is going to be good quality</p> <p>* measure, mark out, cut and shape materials/components with some accuracy</p> <p>*assemble, join and combine materials and components with some accuracy</p> <p>*apply a range of finishing techniques with some accuracy</p>	<p>* use selected tools/equipment with good level of precision</p> <p>* produce suitable lists of tools, equipment/materials needed</p> <p>*select appropriate materials, fit for purpose; explain choices, considering functionality</p> <p>* create and follow detailed step-by-step plan</p> <p>* explain how product will appeal to an audience</p> <p>* mainly accurately measure, mark out, cut and shape materials/components</p> <p>*mainly accurately assemble, join and combine materials/components</p> <p>* mainly accurately apply a range of finishing techniques</p> <p>* use techniques that involve a small number of steps</p> <p>* begin to be resourceful with practical problems</p>	<p>* use selected tools and equipment precisely</p> <p>*produce suitable lists of tools, equipment, materials needed, considering constraints</p> <p>* select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics</p> <p>* create, follow, and adapt detailed step-by-step plans</p> <p>*explain how product will appeal to audience; make changes to improve quality</p> <p>* accurately measure, mark out, cut and shape materials/components</p> <p>* accurately assemble, join and combine materials/components</p> <p>* accurately apply a range of finishing techniques</p> <p>* use techniques that involve a number of steps</p> <p>* be resourceful with practical problems</p>	<p>*Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>*Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</p>
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Evaluate	Share their creations, explaining the process they have used;	*talk about my work, linking it to what I was asked to do * talk about existing products considering: use, materials, how they work, audience, where they might be used *talk about existing products, and say what is and isn't good * talk about things that other people have made *begin to talk about what could make product better	* describe what went well, thinking about design criteria * talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion *evaluate how good existing products are *talk about what I would do differently if I were to do it again and why	*Explore and evaluate a range of existing products *Evaluate their ideas and products against design criteria	* look at design criteria while designing and making *use design criteria to evaluate finished product * say what I would change to make design better *begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose * begin to understand by whom, when and where products were designed * learn about some inventors/designers/ engineers/chefs/ manufacturers of ground breaking products	*refer to design criteria while designing and making *use criteria to evaluate product * begin to explain how I could improve original design *evaluate existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * discuss by whom, when and where products were designed * research whether products can be recycled or reused * know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products	*evaluate quality of design while designing and making finished product against specification, considering purpose and appearance. *test and evaluate final product * evaluate and discuss existing products, considering: how well they've been made, materials, whether they work, how they have been made, fit for purpose * begin to evaluate how much products cost to make and how innovative they are *research how sustainable materials are *talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground breaking products	*evaluate quality of design while designing and making; is it fit for purpose? * keep checking design is best it can be. *evaluate ideas and finished product against specification, stating if it's fit for purpose *test and evaluate final product; explain what would improve it and the effect different resources may have had *do thorough evaluations of existing products considering: how well they've been made, materials, whether they work, how they've been made, fit for purpose *evaluate how much products cost to make and how innovative they are *research and discuss how sustainable materials are *consider the impact of products beyond their intended purpose *discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground breaking-products	*Investigate and analyse a range of existing products. *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
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vocabulary		investigate plan design make evaluate user purpose ideas design criteria product functionality design decisions innovation authenticity	investigate plan design make evaluate user purpose ideas design criteria product functionality design decision innovation authenticity		user purpose design model evaluate prototype annotated functional innovative investigate function design criteria annotated sketch appealing	evaluate design brief design criteria innovative prototype user purpose function appealing	design decisions functionality authentic design specification design brief user purpose prototype mock-up	function innovate design specification design brief user purpose prototype annotated sketch functional mock-up	
Substantive Knowledge									
Technical Knowledge – Materials/Structures		*begin to measure and join materials, with some support *describe differences in materials *suggest ways to make material/product stronger *select materials according to functional properties *create a base for a structure	*measure materials *describe some different characteristics of materials *join materials in different ways *use joining, rolling or folding to make it stronger	*Build structures, exploring how they can be made stronger, stiffer and more stable		*measure carefully to avoid mistakes *use appropriate materials *work accurately to make cuts and holes * join materials *attempt to make product strong *continue working on product even if original didn't work *make a strong, stiff structure		*select materials carefully, considering intended use of the product, the aesthetics and functionality. *measure accurately enough to ensure precision *explain how product meets design criteria *reinforce and strengthen a 3D frame	*Apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Vocabulary		Freestanding structure Stability buttress Replicate Brick bonding Centre of gravity Rigidity Cylinder Triangulation				Strengthen Stiffen Reinforce Corrugating Laminating Ribbing 3D shapes: cube, cuboid, square based pyramid, triangular prism CAD		frame structure stability buttress replicate triangulation rigidity strut tension tie diagonal, horizontal, vertical reinforce	
Technical Knowledge – Mechanisms		*begin to use levers or slides *make a slide, lever and pivot mechanism	*use levers or slides *begin to understand how to use wheels and axles	*Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	*select appropriate tools / techniques *alter product after checking, to make it better *begin to try new/different ideas *use simple lever and linkages to create movement	select appropriate tools / techniques *alter product after checking, to make it better *begin to try new/different ideas *use simple lever and linkages to create movement	*refine product after testing *grow in confidence about trying new / different ideas *begin to use cams, pulleys or gears to create movement	*refine product after testing, considering aesthetics, functionality and purpose *incorporate hydraulics and pneumatics *be confident to try new / different ideas *use cams, pulleys and gears to create movement	*Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
Vocabulary		Card strip Slot Pivot Straight Curved Movement Components slider lever slot bridge/guide	Axle Wheel Body Cab Chassis Fixed/ free mechanism		Card strip Slot Pivot Reciprocating Oscillating Rotating Movement Components Guide/ bridge mechanism	components tubing syringe plunger split pin pneumatic system compression seal linear rotary oscillating reciprocating	pulley gear drive belt gearing up and down mechanical system driver follower mesh motor spindle rotation	cam follower spindle reciprocating oscillating rotating round eccentric snail egg ellipse	

Technical Knowledge – Textiles		<ul style="list-style-type: none"> *measure, cut and join textiles to make a product, with some support *choose suitable textiles 	<ul style="list-style-type: none"> *measure textiles *join textiles together to make a product, and explain how I did it *carefully cut textiles to produce accurate pieces *explain choices of textile *understand that a 3D textile structure can be made from two identical fabric shapes *cut fabric with scissors safely *create a pattern piece *make a knot with the thread to finish the stitch neatly *learn new stitches 		<ul style="list-style-type: none"> *join different textiles in different ways *choose textiles considering appearance and functionality *begin to understand that a simple fabric shape can be used to make a 3D textiles project add applique to products *learn a variety of new stitches -create a product that is fit for purpose 		<ul style="list-style-type: none"> *think about user's wants/needs and aesthetics when choosing textiles *make product attractive and strong *make a prototype *use a range of joining/sewing techniques (*think about how product might be sold *think carefully about what would improve product *apply a 15mm seam allowance *understand that a single 3D textiles project can be made from a combination of fabric shapes *add embellishments to products for visual appeal *use scissors, needles and other tools safely and accurately 		
Vocabulary		<ul style="list-style-type: none"> fabrics joining techniques tools template join thread needle 	<ul style="list-style-type: none"> Joining techniques Sew Needle and thread Running stitch Template Pattern piece Finishing techniques 		<ul style="list-style-type: none"> Joining techniques Sew Needle and thread Running stitch Back stitch Over stitch Applique Template Pattern piece Seam allowance Fastening 		<ul style="list-style-type: none"> Joining techniques Running stitch Back stitch Over stitch Applique Template mock up Pattern piece Seam allowance 		

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Technical Knowledge – Food and Nutrition</p>		<ul style="list-style-type: none"> *describe textures *wash hands & clean surfaces *think of interesting ways to decorate food *say where some foods come from, (i.e. plant or animal) *describe differences between some food groups (i.e. sweet, vegetable etc.) *discuss how fruit and vegetables are healthy *cut, peel and grate safely, with support 	<ul style="list-style-type: none"> *explain hygiene and keep a hygienic kitchen *describe properties of ingredients and importance of varied diet *say where food comes from (animal, underground etc.) *describe how food is farmed, home-grown, caught *draw eat well plate; explain there are groups of food *describe “five a day” *cut, peel and grate with increasing confidence 	<ul style="list-style-type: none"> *Use the basic principles of a healthy and varied diet to prepare dishes *Understand where food comes from. 	<ul style="list-style-type: none"> *carefully select ingredients *use equipment safely *make product look attractive *think about how to grow plants to use in cooking *begin to understand food comes from UK and wider world *describe how healthy diet= variety/balance of food/drinks *explain how food and drink are needed for active/healthy bodies. *prepare and cook some dishes safely and hygienically *grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking 	<ul style="list-style-type: none"> *explain how to be safe/hygienic *think about presenting product in interesting/ attractive ways *understand ingredients can be fresh, pre-cooked or processed *begin to understand about food being grown, reared or caught in the UK or wider world *describe eat well plate and how a healthy diet=variety / balance of food and drinks *explain importance of food and drink for active, healthy bodies *prepare and cook some dishes safely and hygienically *use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking 	<ul style="list-style-type: none"> *explain how to be safe / hygienic and follow own guidelines *present product well - interesting, attractive, fit for purpose *begin to understand seasonality of foods *understand food can be grown, reared or caught in the UK and the wider world *describe how recipes can be adapted to change appearance, taste, texture, aroma *explain how there are different substances in food / drink needed for health *prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source * use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 	<ul style="list-style-type: none"> *understand a recipe can be adapted by adding / substituting ingredients *explain seasonality of foods *learn about food processing methods *name some types of food that are grown, reared or caught in the UK or wider world *adapt recipes to change appearance, taste, texture or aroma. *describe some of the different substances in food and drink, and how they can affect health *prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source. *use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 	<ul style="list-style-type: none"> *Understand and apply the principles of a healthy and varied diet *Prepare and cook a variety of predominantl y savoury dishes using a range of cooking techniques *Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
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Vocabulary	Fruit Vegetable Nutrients Healthy Chop Peel claw	Fruit Vegetable Nutrients Healthy Chop Peel Salad Claw Grate Bridge	Dough Knead Prove Unleavened Yeast		Eatwell plate Grown Caught Sandwich Filling Chop Grate Spread Claw Bridge ingredients	Eatwell plate texture taste appearance rubbing in dough knead	seasonality culture flavour texture taste appearance rubbing in dough knead ingredients vitamins nutrients intolerance	seasonality culture flavour texture taste appearance exploded diagram components ingredients vitamins nutrients intolerance	
Technical Knowledge – Electrical systems	Begin to play with electronic toys such as Plug-n-play electronics and BeeBots (programming)					*use number of components in circuit *program a computer to control product		*use different types of circuit in product * think of ways in which adding a circuit would improve product * program a computer to monitor changes in environment and control product	*Understand and use electrical systems in their products [for example, series circuits
Vocabulary						input output programme/coding control crumble LED sparkle light sensor IF Statement		series circuit paralle components input and output	