

 Design and Technology Curriculum – Year 5 and 6 – Cycle B Link to DT Association guidance – Link to Projects on a Page Documents			
National Curriculum Key Stage 2	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to: Design ♣ 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 ♣ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make ♣ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately ♣ 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 Evaluate ♣ 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 Technical knowledge ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures ♣ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] ♣ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] ♣ apply their understanding of computing to program, monitor and control their products. Cooking and nutrition As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. <i>Pupils should be taught to:</i> Key stage 2 ♣ understand and apply the principles of a healthy and varied diet ♣ prepare and cook a variety of predominantly 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.		
	Developing Planning and Communicating Ideas	Evaluating Processes and Products	Knowledge and Understanding of Materials and Components
Non-Negotiables Year 5	- 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 - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	- 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 - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	- 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
Non-Negotiables Year 6	- 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 - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	- 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 - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	- 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
	Autumn 1: Textiles – bag	Spring 2: Rationing Recipes	Summer 1: What makes bridges so strong?
Hierarchies	To master practical skills: DT5: Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). DT6: Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). DT7: Create objects (such as a cushion) that employ a seam allowance. Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). DT8: Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion). To design, make, evaluate and improve: DT14: Design with the user in mind, motivated by the service a product will offer (rather than simply for profit) DT15: Make products through stages of prototypes, making continual refinements. DT16: Ensure products have a high-quality finish, using art skills where appropriate. To take inspirations form designers from history: DT18: Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. DT19: Create innovative designs that improve upon existing products. D20: Evaluate the design of products so as to suggest improvements to the user experience.	To master practical skills: DT1: Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). DT2: Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. DT3: Demonstrate a range of baking and cooking techniques. DT4: Create and refine recipes, including ingredients, methods, cooking times and temperatures. To design, make, evaluate and improve: DT14: Design with the user in mind, motivated by the service a product will offer (rather than simply for profit) DT15: Make products through stages of prototypes, making continual refinements. DT16: Ensure products have a high-quality finish, using art skills where appropriate. To take inspirations form designers from history DT18: Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. DT19: Create innovative designs that improve upon existing products. D20: Evaluate the design of products so as to suggest improvements to the user experience.	To master practical skills: DT5: Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). DT6: Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). DT11: Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). To design, make, evaluate and improve: DT14: Design with the user in mind, motivated by the service a product will offer (rather than simply for profit) DT15: Make products through stages of prototypes, making continual refinements. DT16: Ensure products have a high-quality finish, using art skills where appropriate. DT17: Use prototypes, cross-sectional diagrams and computer aided designs to represent designs. To take inspirations form designers from history: DT18: Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. DT19: Create innovative designs that improve upon existing products. D20: Evaluate the design of products so as to suggest improvements to the user experience.

Resources	<i>bags, fabric, thread, design sheets, fabric scissors, felt tip pens</i>	Planning resources available on the shared drive. Range of bread products and bread recipes, flours - white, strong, granary and whole-wheat, yeast, small quantities of added ingredients <i>eg cheese, onion, herbs, spices, dried fruits, seeds, apples, bananas</i> , tools and equipment <i>eg weighing scales, mixing bowls, chopping boards, measuring jugs, graters, spoons, rolling pins, pastry brush, bread tins, baking trays, dinner knives</i> , access to an oven, plastic table covers, antibacterial cleaner, hand-washing and washing-up facilities, aprons, computer, CD-ROM or access to websites	<i>Due to the specialised nature of the mechanisms in the unit of work, learning intentions and outcomes are very similar.</i> Resources available on the shared drive. Variety of wood, saws, card triangles, metal rulers, glue guns, glue, card, lolly pop sticks,
Vocabulary	<i>Design, origin, purpose, consumer, audience, fabric, panel, running stitch, basting stich, back stitch, blanket stitch, over stitch, precise, refine, evaluate</i>	designing <i>eg evaluating, investigation, preferences, profile, specification, criteria, fair test, costing</i> making <i>eg ingredients, quantities, shaping, mixing, topping, kneading, proving, baking, cooking method, grilling, boiling, frying, glazing</i> knowledge and understanding <i>eg yeast, wheat, grain, flour, dough, crust, rise</i> names of tools and equipment sensory characteristics <i>eg texture, doughy, crisp, chewy, yeasty, stretchy, elastic</i> food safety <i>eg hygiene, bacteria, mould, decay, food poisoning</i>	making - proto-type, design criteria, knowledge and understanding - pillars, span, gaps, suspension, arch, beams, trusses, load, tension, support,
Flashback	- use safe practices when working with electricity. - How to make a bulb light up in a simple circuit - Improve on existing designs and give reasons for choices	- how to cut materials with precision and refine the finish with appropriate tools (such as a more precise scissor cut after roughly cutting out a shape). - the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). - how to employ a seam allowance. - how to Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).	- a basic bread recipe - different ways of altering a basic bread mixture successfully - how to work safely, hygienically and accurately - a range of baking and cooking techniques.
Lesson 1	WALT: investigate and evaluate a range of bags, according to their purpose. Activities: Children will learn about different types of bag and their purpose, particularly focussing on their locations of origin, weather used for and activities used for. They will look at each of the panels and the shape of those panels. Children will know: - can name and identify the origin of bag types. - subject specific vocabulary when talking about bags - the strengths and weaknesses of each product. Vocabulary: Purpose – the reason a product is made and what it is used for. Panel – a separate piece of fabric that forms part of a bag. Origin – where something comes from or was first made. Evaluate – to look carefully at strengths and weaknesses.	WALT: investigate and evaluate bread products according to their characteristics. Activities: Children will learn about different types of bread and the cultures and/or regions from which they originate. They will then taste and describe a variety of breads. Children will know: - the origin of a number of bread products - appropriate vocabulary to describe bread products - how to compare and evaluate a variety of bread products Vocabulary: Origin – the country or culture where a type of bread comes from. Texture – how the bread feels when you touch or bite it (soft, chewy, crusty). Flavour – how the bread tastes (sweet, savoury, spiced). Evaluate – to judge what is good and what could be improved.	WALT: explore ways in which pillars and beams are used to span gaps. Activities: Children will learn about how simple bridges are constructed using beams, pillars or piers, then make and test beam bridge designs. Children will know: - technical vocabulary to explain how beam bridges are constructed - the impact better bridge design has had on daily life - the effectiveness of different beam/pillar designs Vocabulary: Beam – a long, straight piece that supports weight across a gap. Pillar – a strong vertical support that holds up parts of a bridge. Span – the distance a bridge covers from one side to the other. Load – the weight that a bridge has to hold.
Lesson 2	WALT: practice and evaluate different stitch types, for a particular purpose. Activities: Children will have an opportunity to try a range of stitch types and discuss the positives and negatives for each. They will discuss which stich type will be most useful for making a drawstring bag. (running stitch, basting stich, back stitch, blanket stitch, over stitch) Children will know: - different stitch types - how to sew a variety of stitch types - evaluate each stitch type based on making a bag Vocabulary: Stitch – a loop of thread made when sewing. Running stitch – a simple stitch that goes in and out in a straight line. Back stitch – a strong stitch where each stitch overlaps the previous one. Blanket stitch – a decorative stitch used around edges to strengthen them.	WALT: how bread products are an important part of a balanced diet and can be eaten in different ways. Activities: Children will learn about the nutritional content of bread, then consider some different ways it may be used in meals. Following this, children may either conduct surveys or prepare to collect data about eating bread Children will know: - the contribution bread can make to a healthy diet - how to use a recording sheet to complete a survey - how to prepare data, present and evaluate their findings Vocabulary: Nutrition – the goodness in food that helps your body stay healthy. Carbohydrates – a nutrient found in bread that provides energy. Survey – a way of collecting information or opinions from people. Data – the information you collect and examine to find patterns.	WALT: explore ways in which trusses can be used to strengthen bridges. Activities: Children will learn how trusses are used in bridge design to spread out compression forces. They may then either build and test model truss bridges – cutting of wood – use of card triangles to strengthen) Children will know: - technical vocabulary to explain how truss bridges spread the load of objects travelling across them - how to stiffen and strengthen structures - how to evaluate their models against established design criteria Vocabulary: Truss – a strong framework made of triangles that helps spread weight. Compression – a force that pushes materials together. Strengthen – to make something more solid or sturdy. Structure – the parts arranged together to make something stab

Lesson 3	WALT: design an appealing product based on a design criterion. Activities: Based on their research the children will create a bag. They need to consider the shape of each piece and which stitch type will be used to attach the pieces of fabric together. They will draw their design and then draw the individual pieces. Children will know: - how to use their research to design the shape of their bag and select appropriate materials - how to plan what shape each panel will be - what stitch type they will use. Vocabulary: Design criteria – the rules or needs the product must meet. Template – a shaped piece used as a guide for drawing or cutting fabric. Panels – the individual fabric pieces that join to form a bag. Materials – the fabrics or items used to make the product.	WALT: know which different ingredients are needed to make bread and how ingredients can be altered and mixed to create different effects. Activities: Children will learn about the ingredients of bread and how they may be used. They will then make bread, adapting and changing the recipe either according to given instructions or according to their own ideas. Children will know: - how to follow instructions - how to weigh and measure with greater accuracy including calculating ratios of ingredients - understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). - different ways of altering a basic bread mixture successfully Vocabulary: Ingredients – the foods that are mixed together to make bread. Yeast – a living ingredient that helps bread to rise. Knead – to work and stretch the dough to make it smooth and elastic. Ratio – the balance between quantities of ingredients in a recipe.	WALT: explore ways in which arches are used to strengthen bridges. Activities: Children will learn how arches are used to spread and redirect compression forces acting on bridges. They will then build and test model arch bridges. Children will know: - technical vocabulary to explain how arch bridges are constructed - technical vocabulary to explain how arch bridges work - build and test models to find a strong bridge design Vocabulary: Arch – a curved shape that helps spread weight evenly. Keystone – the central stone at the top of an arch that locks it in place. Force – a push or pull acting on a structure. Support – to hold something up so it doesn't fall.
Lesson 4	WALT: cut materials precisely with scissors, refining to improve quality. Activities: Children will draw their panels on to felt with a template and cut out precisely using fabric scissors. Once complete they need to use their scissors to refine the shapes so that they have been finished to high quality and will join together accurately. Children will know: - how to draw onto fabric accurately using a template - how to will cut out shapes precisely - how to refine their cutting to ensure a high-quality finished product. Vocabulary: - Precision – cutting or measuring carefully and accurately. - Refine – to improve something by making small, careful changes. - Fabric scissors – special scissors used only for cutting fabric cleanly. - Template – (revisited) a guide for cutting accurate shapes.	WALT: design a new bread product for a particular person or event. Activities: Children will create their own bread recipes and develop ideas regarding how it may be turned out, e.g. flat, plaited, as a large 'bun'. Children will know: - how to use the results of investigations when developing design ideas - how they will make their product - what purpose they are designing and creating their product for - how to create and refine recipes, including ingredients, methods, cooking times and temperatures. Vocabulary: - Design – a plan for what your product will look like and how it will be made. - Recipe – instructions listing the ingredients and steps needed to make the bread. - Shape – the form of the bread (flat, plaited, bun, roll). - Purpose – the reason the bread is being made (for an event, a person, a meal).	WALT: know how suspension bridges are able to span long distances. Activities: Children will learn about how suspension bridges use tension to support bridge decks spanning large distances. They may then either build and test model suspension bridges, or research and write about iconic suspension bridges. Children will know: - how tension and compression forces are distributed by suspension bridges - how to build a model suspension bridge that will support a given weight - know how to evaluate the designs of others and consider their views Vocabulary: - Suspension – a bridge design where cables hold up the roadway. - Tension – a force that pulls materials tight. - Cable – a strong, thick wire used to support the bridge. - Deck – the flat surface of the bridge that people or vehicles travel across.
Lesson 5	WALT: use appropriate stitching techniques to join multiple piece of fabric together. Activities: The children will use the fabric pieces they have cut out and stitch them together following the plan, using an appropriate technique that they have learnt. Children will know: - appropriate stitching method - how to execute their stitching accurately to join the pieces together - different stitch types depending on the outcome they are trying to achieve. Vocabulary: Seam – the line where two pieces of fabric are sewn together. Join – to attach pieces of fabric together using stitches. Thread – the thin strand used for sewing fabric. Technique – the specific skill or method used when sewing.	WALT: make bread based on a plan and design. Activities: Referring to previously created designs, children will make and bake their own bread. Children will know: - how to apply what they have learnt when making their product - how to follow a design accurately - how to work safely, hygienically and accurately - a range of baking and cooking techniques. Vocabulary: Method – the step-by-step instructions you follow while cooking. Hygiene – keeping yourself and your workspace clean and safe while cooking. Technique – a specific cooking skill (kneading, shaping, proving). Bake – to cook dough in the oven until it becomes bread.	WALT: develop criteria and design a prototype bridge for a purpose. Activities: Having been presented with a design brief, children must develop criteria for a bridge design that will meet the terms of the brief. They will then either design a bridge according to their criteria, or generate more criteria for a range of given design briefs. Children will know: - know how to write design criteria according to a given brief - how to design a prototype model according to design criteria - to work collaboratively to produce a prototype according to an agreed design Vocabulary: Design criteria – the rules the bridge must meet to be successful. Prototype – the first version of a design used to test ideas. Brief – the instructions explaining what the design must achieve. Collaborate – to work together with others to create something.
Lesson 6	WALT: evaluate the quality of their product based on the design criterion. Activities: Once the children have completed their bags they will evaluate them based upon if they are fit for purpose, the look, the finish of the stitch. They will evaluate the strengths and areas for improvement for each aspect. Children will know: - the strengths and areas for improvement of their project, and can be objective about this - actions they can take to make these improvements - how to they have taken inspiration from the research that they conducted.	WALT: evaluate a finished product. Activities: Children will taste and evaluate their own bread recipes. Some children may suggest ways in which their recipe/design may be improved. Children will know: - evaluate a finished product fairly - how they could make further improvements to their product if they were to make it again - evaluate what they have learnt throughout the course of the module Vocabulary: Fit for purpose – how well the bread meets what it was designed for.	WALT: devise tests and analyse and evaluate products according to design criteria. Activities: Following on from the previous lesson, children will consider ways in which they might test their bridge design once constructed. They will then build and test their designs. Children will know: - how to devise tests to analyse a product according to design criteria - know how to evaluate their product according to design criteria - the views of others and think of ways to improve their work

	Vocabulary: Fit for purpose – how well a product works for the job it was designed to do. Finish – how neat, tidy, and well-made the final product looks. Strengths – the parts of the product that work well. Improvements – changes that would make the product better.	Appearance – how the bread looks (colour, shape, finish). Strengths – the parts of the product that worked well. Improvements – changes that would make the bread better next time.	• How to cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). Vocabulary: Test – an activity that checks how well a design works. Analyse – to look closely at results to understand how well something performed. Refine – to improve something by making small changes. Evaluate – to judge what worked well and what could be improved.
Key Knowledge	Children will know: • how to cut materials with precision and refine the finish with appropriate tools (such as a more precise scissor cut after roughly cutting out a shape). • the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). • how to employ a seam allowance. • how to Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).	Children will know: • a basic bread recipe • different ways of altering a basic bread mixture successfully • how to work safely, hygienically and accurately • a range of baking and cooking techniques.	Children will know: • how to materials with precision and refine the finish with appropriate tools (such as saw/bench hook sanding wood after cutting) • a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).