Barton Clough Primary School

DT Curriculum Overview

The Outcome – Designers

What will our designers to be able to do when they leave us?

By the time our designers leave Barton Clough they will have become resourceful, innovative, enterprising and capable citizens. They will have been inspired by inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products and in doing so made the world a better place. Our designers will be able to critique, evaluate and test their ideas and products and the work of others. They will use their creativity and imagination with confidence; to design and make products that **solve real and relevant problems** within a variety of contexts, considering their own and others' needs, wants and values. They will be given the opportunities to collaborate with others and to reflect on the products they have created. The children will understand how they could utilise their developing skills and passions through the many opportunities in the world of work.

Threads

One World	Human Impact	Human Endeavour
Diversity & Mutual Respect Democracy & Individual Liberty	Sustainability & Ecology	The spirit of adventure, innovation and inspiration

Starting Points – Area of Study

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Food	Mechanisms	Textiles	Electrical Systems	Structures	Textiles	Food
Structures	Structures	Food	Mechanisms	Food	Electrical Systems	Textiles
Mechanisms	Food	Structures	Textiles	Mechanisms	Structures	Mechanisms

Curriculum Coverage – NC

The minimum requirements as detailed within the National Curriculum

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design ♣ design purposeful, functional, appealing products for themselves and other users based on design criteria ♣ generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology **Make**			**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**			

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♣ select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] ♣ select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics **Evaluate** ♣ explore and evaluate a range of existing products ♣ evaluate their ideas and products against design criteria **Technical knowledge** ♣ build structures, exploring how they can be made stronger, stiffer and more stable ♣ explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. **Cooking and nutrition:** ♣ use the basic principles of a healthy and varied diet to prepare dishes ♣ understand where food comes from.	♣ 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:** ♣ 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 & processed.

Process Skills and Process Knowledge – Knowing How?

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Developing, Planning and Communicating Ideas • Begin to use the language of designing (i.e. design, plan, draw) • Learn how to plan and adapt initial ideas to make them better • Verbally explain some features of their design **Working with tools, equipment, materials and components to make quality products** • Construct their product with a simple purpose in mind	**Developing, Planning and Communicating Ideas** • Draw on their own experience to help generate ideas • Suggest ideas and explain what they are going to do • Identify a target group for what they intend to design and make • Model their ideas in card and paper Develop their design ideas applying findings from their earlier research **Working with tools, equipment, materials and components to make quality products**	**Developing, Planning and Communicating Ideas** • Generate ideas by drawing on their own and other people's experiences • Develop their design ideas through discussion, observation, drawing and modelling • Identify a purpose for what they intend to design and make • Identify simple design criteria • Make simple drawings and label parts **Working with tools, equipment, materials and**	**Developing, Planning and Communicating Ideas** • Generate ideas for an item, considering its purpose and the user/s • Identify a purpose and establish criteria for a successful product. • Plan the order of their work before starting • Explore, develop and communicate design proposals by modelling ideas Make drawings with labels when designing **Working with tools, equipment, materials and components to make quality products**	**Developing, Planning and Communicating Ideas** • Generate ideas, considering the purposes for which they are designing • Make labelled drawings from different views showing specific features • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail Evaluate products and identify criteria that can be used for their own designs.	**Developing, Planning and Communicating Ideas** • Generate ideas through brainstorming and identify a purpose for their product • Draw up a specification for their design • Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail • Use results of investigations, information sources, including IT when developing design ideas.	**Developing, Planning and Communicating Ideas** • Communicate their ideas through detailed labelled drawings • Develop a design specification • Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways Plan the order of their work, choosing appropriate materials, tools and techniques **Working with tools, equipment, materials and components to make quality products**

• Use simple tools to shape, assemble and join materials together • Mix ingredients using simple utensils Follow basic food safety and hygiene procedures **Evaluating Processes and Products** • Verbally explain what they like/dislike about their product Suggest one thing that they might change when creating a similar product	• Make their design using appropriate techniques • With help measure, mark out, cut and shape a range of materials • Use tools *eg scissors and a hole punch* safely • Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape • Select and use appropriate fruit and vegetables, processes and tools • Use basic food handling, hygienic practices and personal hygiene Use simple finishing techniques to improve the appearance of their product **Evaluating Processes and Products** • Evaluate their product by asking questions about what they have made and how they have gone about it • Evaluate their product by discussing how well it works in relation to the purpose Evaluate their products as they are developed, identifying strengths and possible changes they might make	**components to make quality products** • Begin to select tools and materials; use vocab' to name and describe them • Measure, cut and score with some accuracy • Use hand tools safely and appropriately • Assemble, join and combine materials in order to make a product • Cut, shape and join fabric to make a simple garment. Use basic sewing techniques • Follow safe procedures for food safety and hygiene Choose and use appropriate finishing techniques **Evaluating Processes and Products** • Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Talk about their ideas, saying what they like and dislike about them	• Select tools and techniques for making their product • Think about their ideas as they make progress and be willing change things if this helps them improve their work • Measure, mark out, cut, score and assemble components with more accuracy • Work safely and accurately with a range of simple tools • Demonstrate hygienic food preparation and storage Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including IT **Evaluating Processes and Products** • Evaluate their product against original design criteria *e.g. how well it meets its intended purpose* • Disassemble and evaluate familiar products	**Working with tools, equipment, materials and components to make quality products** • Select appropriate tools and techniques for making their product • Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques • Use simple graphical communication techniques • Join and combine materials and components accurately in temporary and permanent ways • Measure, tape or pin, cut and join fabric with some accuracy • Sew using a range of different stitches, weave and knit **Evaluating Processes and Products** • Evaluate their work both during and at the end of the assignment • Evaluate their products carrying out appropriate tests	**Working with tools, equipment, materials and components to make quality products** • Select appropriate materials, tools and techniques • Measure and mark out accurately • Use skills in using different tools and equipment safely and accurately • Weigh and measure accurately (time, dry ingredients, liquids) • Apply the rules for basic food hygiene and other safe practices *e.g. hazards relating to the use of ovens* • Cut and join with accuracy to ensure a good-quality finish to the product **Evaluating Processes and Products** • Evaluate a product against the original design specification • Evaluate it personally and seek evaluation from others	• Select appropriate tools, materials, components and techniques • Assemble components make working models • Make modifications as they go along • Use tools safely and accurately • Construct products using permanent joining techniques • Pin, sew and stitch materials together create a product • Achieve a quality produc **Evaluating Processes and Products** t • Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests • Record their evaluations using drawings with labels • Evaluate against their original criteria and suggest ways that their product could be improved

Propositional Knowledge – Knowing What?

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Food – Tea Party -To understand technical vocabulary	**Mechanisms – Pop up card** -To understand technical vocabulary	**Textiles – Recycled puppet** -To understand technical vocabulary	**Electrical Systems – Noise making toy**	**Structures – Gift box** -To understand technical vocabulary	**Textiles – Soft toy** -Understand technical vocabulary.	**Food – Food from our community**

– that food comes from plants and animals. -how to prepare simple dishes safely and hygienically, without using a heat source -	- Know about the movement of simple mechanisms such as levers and sliders	-Know that a 3-d textiles product can be assembled from two identical fabric shapes	-To understand technical vocabulary -Know how simple electrical circuits and components can be used to create functional products	- Know how to make strong, stiff shell structures -Know how to reinforce and strengthen a 3D framework	- use pinking sheers and understand why - to sew on a button	-To understand technical vocabulary -That a recipe can be adapted by adding or substituting one or more ingredients - Adaptations needed for diet and religious reasons
Structure – Forest School den building -To understand technical vocabulary -Are the structures strong, can we make them stronger	**Structures – Forest school den building** -To understand technical vocabulary - Know how freestanding structures can be made stronger, stiffer and more stable	**Food - A balanced meal / healthy plate** -To understand technical vocabulary -Know that food ingredients can be fresh, pre-cooked and processed -Know that food is grown, reared and caught -How to use a range of techniques including: peeling, chopping, grating, mixing, spreading, -a healthy diet is made up of a variety and balance of different food and drink -to be active and healthy, food and drink are needed to provide energy for the body	**Mechanisms – Pop up / lever books** -To understand technical vocabulary -Know how mechanical systems create movement -Know about the movement of simple mechanisms such as levers and sliders	**Food - Come dine with me** -To understand technical vocabulary -how to cook a variety of mainly savoury dishes safely and hygienically, with the use of a heat source -how to use a range of techniques including: peeling, chopping, slicing, grating, mixing, spreading, kneading, baking -a healthy diet is made up of a variety and balance of different food and drink -to be active and healthy, food and drink are needed to provide energy for the body	**Electrical Systems – Board game** -To understand technical vocabulary -Know how simple and more complex electrical circuits and components can be used to create functional products - To understand a design specification	**Textiles – Pencil case** -To understand technical vocabulary -Children should know that a 3D textiles product can be made from a combination of fabric shapes -To select an use either a zip, poppers or buttons in their design.
Mechanisms -Build a car -To understand technical vocabulary -What are a wheel and an axel	**Food - Food around the world:** -To understand technical vocabulary -that all food comes from plants or animals -that food has to be farmed, grown elsewhere	**Structures – Bird feeder / box** -To understand technical vocabulary - To know that structures can be made stronger, stiffer and more stable.	**Textiles – Draw string story sack** -To understand technical vocabulary - Children should know that a 3D textiles product can be made from a combination of fabric shapes	**Mechanisms – Vehicles** -To understand technical vocabulary -Know how mechanical systems create movement	**Structures – Grand designs – be an architect** -To understand technical vocabulary - To understand a design brief and evaluate its fulfilment.	**Mechanisms – Fairground ride** -To understand technical vocabulary - Know how mechanical systems create movement

	or caught -how to name and sort foods into the five groups -everyone should eat at least 5 portions of fruit and veg a day -how to prepare simple dishes safely and hygienically, without using a heat source -how to use techniques such as cutting, peeling and grating -that food ingredients should be combined based on their sensory characteristics	-Know how to reinforce and strengthen a 3D framework	-Children should understand that their design has a purpose and must fulfil this	- Understand the meaning of technical vocabulary below. - Understand function of moving parts		- to create an exploded diagram - To understand the functions of component parts

Key Subject Vocabulary

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mechanisms **Wheels & Axles:** Car, wheel, pull, push **Structures** **Freestanding Structures:** Cut, join, weak, strong **Food** **Preparing food** Cut, taste, fruit, vegetable, bread, sandwich	**Mechanisms** **Slider & Levers** Slider, slot, masking tape, pull, push, down, straight, work, design **Structures** **Freestanding Structures:** Cut, fold, join, fix, weak, strong, underneath **Food** **Preparing Fruit & Vegetables:** Fruit, vegetables, soft, juicy, crunchy, sticky, smooth, sharp, crisp, sour hard, flesh, skin, seed pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, tasting, arranging	**Textiles** Template, quality, suitable, features, dye, overstitch, design, fray, mock-up, seam, running stitch, pattern, needle, fabric, mark out , **Structures** **Freestanding Structures:** Structure, base, underneath, thicker, thinner, corner, point, straight, curved, rectangle, cube, cuboid, cylinder, material, joining **Food** **Preparing Fruit & Vegetables:** Fruit, vegetables, soft, juicy, crunchy, sticky, smooth, sharp, crisp, sour hard, flesh, skin, seed pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, tasting, arranging	**Textiles** Fastening, compartment, zip, finishing technique, function, prototype, back stitch, felted, woven, knitted, bonded, aesthetics, pinning, seam allowance, running stitch **Electrical Systems** User, fault, switch, insulator, conductor, battery holder, crocodile clip, circuit, connection, **Mechanisms** **Leavers & linkages:** Loose pivot, fixed pivot, system, input, process, mechanism, pull, push, fastener, design, evaluate, slider, slot	**Mechanisms** **Wheels and Axels:** Axel, wheel, driver, motor, chassis, power, acceleration, annotated drawings, function, **Structures** **Shell Structures:** Assemble, 3D shape names, vertex, face, edge, breadth, capacity, scoring, adhesives, reduce, reuse, recycle, corrugating, laminating **Food** **Healthy & Varied Diet:** Texture, taste, appearance, preference, greasy, moist, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested, allergy, intolerance	**Textiles** Specification, tacking, working drawing, button, pinking shears, design criteria, hem, reinforce, name a variety of stitches **Electrical Systems** Parallel circuit, light emitting diode, monitor, flowchart, design specification, switch **Structures** **Frame Structures:** Reinforce, stability, temporary, permanent, prototype, innovation, functional, design brief	**Textiles** Applique, annotate, evaluate, innovation, functionality, renewable, authentic, use a variety of stitches, zip, popper, button **Mechanisms** **Pulleys or Gears:** Pulley, gear, rotation, motor, transmit, annotated drawings, exploded diagrams, functionality **Food** **Celebrating Culture & Seasonality:** Ingredients, yeast, dough, wholemeal, unleavened, baking soda, spice, herbs, carbohydrate, sugar, fat, protein, vitamins,

						nutrients, gluten, allergy, intolerance, savoury, seasonality, pour, mix, kneed, whisk, beat, combine, fold, rubbing in, diet requirements

Experiences and Wider Purpose						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Have a tea party as a class	To see that food is different around the world	Make a bird feeder for forest school / home and understand its purpose	To make a story sack to keep their favourite books	To make food for others.	To understand that they could be an architect. To invite in an architect to discuss their work	To have an understanding of the different food people in our school community cook. That they could be a chef or work in the food industry. To have a visit from a chef.