Design Technology Long Term Overview

Curriculum Intent Statement

How does the curriculum build on prior learning and prepare pupils for future learning?

At our school, we aim to equip all pupils from Preschool to Year 6 with the knowledge, skills and confidence to become creative designers, problem-solvers and innovators. Through a carefully sequenced Design and Technology curriculum, children develop their understanding of designing, making and evaluating products while building practical skills across food technology, textiles, mechanisms, structures, electrical systems and digital design.

We intend for pupils to become resilient and reflective learners who can identify needs, generate ideas, select appropriate materials and tools, and create high-quality products for a range of real-life purposes and users. Through purposeful projects, pupils learn to apply knowledge from across the curriculum, particularly science, computing, mathematics, history and geography. https://8882636-my.sharepoint.com/personal/kfoulds_manorroad_lancs_sch_uk/_layouts/15/Doc.aspx?sourcedoc={7B47CF85-55B8-4CB6-BABD-282C39C65205}&file=Long Term Plan DT 26 27.docx&action=default&mobileredirect=true

The curriculum is carefully sequenced so that learning builds progressively from exploration, construction and creating with materials in the Early Years to increasingly complex design challenges in Key Stage 2. Pupils develop the technical knowledge and disciplinary skills needed to research, prototype, test, refine and evaluate products, enabling them to become increasingly independent and confident designers.

Food and nutrition are woven throughout the curriculum, helping pupils develop an understanding of healthy lifestyles, food preparation and where food comes from. Opportunities to explore mechanisms, structures, electrical systems, coding and computer-aided design ensure that pupils gain an understanding of both traditional and modern technologies and their impact on everyday life. https://8882636-my.sharepoint.com/personal/kfoulds_manorroad_lancs_sch_uk/_layouts/15/Doc.aspx?sourcedoc={7B47CF85-55B8-4CB6-BABD-282C39C65205}&file=Long Term Plan DT 26 27.docx&action=default&mobileredirect=true

By the end of Year 6, pupils will have the skills, knowledge and creativity needed to design and make purposeful products, apply critical thinking when solving problems, and understand how design and technology shapes the world around them, preparing them for the next stage of their education and future careers.

Class	Autumn Term		Spring Term		Summer Term	
	1	2	1	2	1	2
Pre-School Cycle A	**All About me**	**Autumn Festivals**	**Polar Regions**	**People who help us**	**Marvellous Minibeasts**	**Adventure**
Pre-School Cycle B	**All About me**	**Celebrations**	**Under the Sea**	**Transport**	**Let's Grow!**	**Fairytales**
Personalisation and Subject Links	Everything planned from children's interests from parent's questionnaires on children's likes. DT in Pre- School won't follow a set DT week but children will explore the pre learning needed for DT using the statements from Development Matters as a guide for leaning. All learning will be based upon children's interests. I can make a simple collage I can develop simple joining techniques – glue sticks/ PVA/ sellotape I can use various construction materials – joining pieces/ stacking / balancing I can use resources available to create props / support my play **Key learning in D&T in Pre-School will come up as the year progresses on children's interests (See EX A & D floor book)**					
Reception	Use different textures and materials to make houses for the three little pigs		Shadow Puppets Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue.		Design and make rockets. Design and make objects they may need in space, thinking about form and function.	
Personalisation and Subject	Everything planned from children's interests from parent's questionnaires on children's likes. <u>Key Skills</u> • Explore – experiment and build with a range of construction resources, find out about the properties and functions of different construction materials. • Design – talk about their ideas, choose resources, tools and techniques with a purpose in mind. • Make – make models and props using different construction materials, e.g. construction kits, reclaimed materials. Experiment with different ways to build, construct and join resources. Make props to use in their play /role play/ when acting out stories/taking on story characters. • Evaluate – talk about what they like/dislike about their models/constructions/props say why, and how					

<table>
<tr><td>Links</td><td colspan="3">they would change them. • Tools and equipment – use equipment and tools to build, construct and make simple models and props; use tools and equipment linked to food preparation. • Safety – handle and use equipment appropriately and safely.
<u>Ongoing: Creating with Materials ELGs</u>
• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
• Share their creations, explaining the process they have used.
Make use of props and materials when role playing characters in narratives and stories.</td></tr>
<tr><td>vocab</td><td>Build, Plan, Design, Make, Test, Structure, pigs, wolf, strong, bricks, wood, sticks, paper</td><td>Glue, tape, shadow, lollypop stick, puppet, show, sun, light, dark</td><td>Design, make, plan, evaluate, rockets, space</td></tr>
<tr><td>Y1</td><td>Mechanisms:
Moving pictures incorporating sliding mechanisms
Design a moving Christmas card for your parents
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
• Select from and use a range of tools and equipment to perform practical tasks.
• Select from and use a wide range of materials and components, including materials and construction according to their characteristics.
Evaluate
• Explore and evaluate a range of existing products.
• Evaluate their ideas and products against design criteria.
Technical Knowledge
Know how a sliding and pivoted lever work</td><td>Textiles:
Design an item of clothing that is fit for purpose
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
Make
• select from and use a range of tools and equipment to perform practical tasks
• Select from and use a wide range of materials and components, including materials and textiles according to their characteristics
Evaluate
• evaluate their ideas and products against design criteria
• Explore and evaluate a range of existing products.
Technical Knowledge
• Know how to create a template for the umbrella.
• Know how to do a running stitch to join</td><td>. Food Tech:
Design a fruit salad as a healthy snack (in an inventive way) for a reception child
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
• select from and use a range of ingredients, according to their characteristics.
• select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, grating, slicing, peeling.
Evaluate
• Explore and evaluate a range of existing products.
• Evaluate their ideas and products against design criteria.
Technical Knowledge
• Use the basic principles of a healthy and varied diet to prepare dishes.
• Understand where food comes from
• Know how to slice, peel, cut different fruits - safely with the correct equipment.</td></tr>
<tr><td>Personalisation and Subject</td><td>R.E. Christmas</td><td>Science (testing materials and ways of joining together)
English: classic stories</td><td>Science- The Human Body
Fitness Week- Keeping Healthy</td></tr>
</table>

Links			
vocab	evaluate, investigate, design, plan, make, user, purpose, product, tools, materials		
	Moving picture, mechanism, test, move,, materials, tools, Sellotape, masking tape, PVA glue, glue, scissors, split pin, create, test, slider, lever, pivot, slot, bridge/guide, upwards, downwards, forwards, backwards	Material, test, join, decorate, smooth, soft, rough, bumpy, cut, scissors, template, pattern pieces, mark out, finish, fabric, names of fabrics & components needle, pin (cushion), thread, stitch, knot	Food, fruit, fruit salad, healthy eating, farm, plant, grown, colours, supermarket, tinned, fresh, frozen. chop, knife, grate, juice, create, taste, hygienic, sensory vocab., names of ingredients
Y2	**Construction: Bridges** **Design and build a bridge for a toy vehicle so it can bridge a gap** **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** • build structures, exploring how they can be made stronger, stiffer and more stable **Evaluate** • Explore and evaluate a range of existing products. • Evaluate their ideas and products against design criteria. **Technical Knowledge** • Know how to strengthen structures	**Mechanisms: wheels & axles** **Design and build a lunar buggy to transport Mini Tim.** **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, ICT. **Make** • Select from and use a range of tools and equipment to perform practical tasks. • Select from and use a wide range of materials and components. • Build structures, exploring how they can be made stronger, stiffer and more stable. • Explore and use mechanisms (wheels & axles) in their products **Evaluate** • Explore and evaluate a range of existing products. • Evaluate their ideas and products against design criteria. **Technical Knowledge** • Know how wheels and axles work together to allow movement	**Cooking and nutrition:** **Make a healthy savoury and sweet salad for someone in my family.** **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, ICT. **Make** • Select from and use a range of tools and equipment to perform practical tasks. • Select from and use a wide range of materials and components. **Evaluate** • Explore and evaluate a range of existing products. • Evaluate their ideas and products against design criteria. **Technical Knowledge** • use the basic principles of a healthy and varied diet to prepare dishes. • Understand where food comes from

			• Know how to grate, slice, peel, cut different fruits and vegetables- safely and with the correct equipment.
Personalisation and Subject Links	Science: link to materials	Science: link to materials History: UK Space History	Science: link to animals including humans Health and Fitness Week
vocab	purpose, product, user, design criteria, evaluate, tools, plan, diagram, label, investigate, adapt, function names of materials, components and tools used		
	cut, fold, join, fix, weak/strong, stable thinner/thicker, fixed joint, moving joint reduce/reuse/recycle, material, paper, card, glue, tape, names of shapes & properties structure, framework, base, top/side/edge, surface, corner, straight, load, span	wheel, axle, axle holder, chassis, fixed, free, moving, mechanism, vehicle, assembling, cutting, joining, shaping, finishing	sensory vocab, shop, supermarket, factory farm, names of equipment and utensils used, slice, peel, cut, chop, squeeze, juice, fruit and vegetable names, skin/peel, seed/pip/stone core, salad, clean, hygienic, healthy diet, balance, ingredients, carbohydrate, fruit, vegetables, protein, dairy, fat, sugar, tinned, dried, fresh , frozen
Year 3	**Food technology:** **Design a healthy sandwich that your Y3 friend would enjoy eating.** **Design** • use research and develop design criteria to inform the design of innovative and functional products that are fit for purpose, aimed at particular individuals or groups • generate, model and communicate their ideas through discussion, annotated sketches and cross-sectional diagrams. **Make** • prepare a savoury dish for a relevant occasion & consumer • select from and use a wider range of tools and equipment to perform practical tasks **Technical Knowledge** • Know that food ingredients can be fresh, pre-cooked and processed • understand and apply the principles of a healthy and varied diet	**pneumatic mechanisms** **Design a moving robot to surprise R/Y1 children and make them smile.** **Design** • develop design criteria to inform the design of 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 and prototypes **Make** • select from and use a wider range of tools and equipment to perform practical tasks • select from and use a wider range of materials and components, including construction materials, 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 as they progress and consider	**structures** **Design and build an outdoor shelter to keep a group of five Y3 children shaded from the sun.** **Design** • use research and develop design criteria to inform the design of innovative and functional products that are fit for purpose, aimed at particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated sketches/ diagrams and prototypes **Make** • select from and use a wider range of tools and equipment to perform practical tasks • select from and use a wider range of materials including construction materials, according to their functional properties **Evaluate** • investigate and analyse existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work **Technical knowledge** Know how to make a structure more stable.

	• understand seasonality, and know where and how a variety of ingredients are grown or reared	the views of others (inc intended users) to improve their work **Technical knowledge** • know how mechanical systems such as pneumatic systems create movement	
Personalisation and Subject Links	Science link: healthy eating	Link to Science magnetism & forces Guided reader: Wild Robot	Science link: light & shadows Use of outdoor area & team-building skills
vocab	model, design, evaluate, prototype, investigate, plan, construction sequence, appealing, intended user, purpose, function, functional, design criteria, exploded diagram, annotated sketch, adapt, modify names of materials, tools and components used		
	ingredient, slice, chop, grate, peel, fresh, processed, consumer, seasonal, grown vs reared, farmed, hygienic, (vocab concerning "Eatwell Plate"), aesthetics, cross-section, (vocab for ingredients used), chopping board, grater, peeler, vegetable knife, butter knife, vegetarian ,vegan, allergy, diet	design criteria, function, functional, modify, evaluate, purpose, mechanism, pneumatic system, pressure, compress, force, input, output, component, design sequence, (vocab for components, materials & fixatives used inc. syringe, tubing, masking tape, sticky tape, PVA)	structure, prototype, mock up, user, stable, stability, strength, support, frame, framework, joint, (vocab for components, materials & fixatives used)
Year 4	**Electrical Systems:** **Design a night light for a younger child.** **Design** • use research and develop design criteria to inform the design of innovative and functional products that are fit for purpose, incorporating electrical systems (switches, bulbs, buzzers & motors) and aimed at particular individuals or groups • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional diagrams and prototypes Make • select from and use a wider range of tools and equipment to perform practical tasks • select from and use a wider range of materials including construction materials & electrical components, according to their functional properties	**Textiles: pencil case** **Design a pencil case for a Y4 child to use in school.** **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 ideas through … **Make** • Select from and use a wider range of tools and equipment to perform practical tasks (cutting, shaping, joining and finishing) accurately • Select from and use a wider range of materials and components, including textiles, according to their functional properties and aesthetic qualities **Evaluate**	**Food Technology** **Make a healthy fajita for us to eat for our lunch** • 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. **Technical Knowledge** • Know that food ingredients can be fresh, pre-cooked and processed

	Evaluate • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria as they progress and consider the views of others to improve their work **Technical Knowledge** • Know how simple electrical circuits and components can be used to create functional products	• Evaluate their ideas and products against their own design criteria and consider the views of others, including intended users, to improve their work • investigate and analyse a range of existing products **Technical Knowledge** • Know that a single fabric shape can be used to make a 3D textiles product	
Personalisation and Subject Links	Science: electrical circuits	useful product	Science: healthy eating
vocab	evaluate, prototype, purpose, function, appealing, plan, adapt, modify, innovative, evaluation, annotated sketch, construction sequence, design brief, design criteria, intended user names of materials, components and tools used		
	names of tools, equipment and materials used, series circuit, connection, switch battery (holder) bulb (holder) wire, insulator, conductor, crocodile clip, control, system, mechanism, lever, linkage, pivot, slot, bridge, guide, system, input/output, process, linear/ rotary motion	fastening, button, hook, compartment, structure, finishing technique, strength/weakness, stiffening, templates, fabric, names of fabrics, stitch, seam, seam allowance	texture, taste, flavour, sweet/sour, hot, spicy, appearance, smell, moist/dry, savoury, bake, cook, boil, prepare, hygienic, harvested, grown, reared, caught, seasonal, processed, fresh, dried, grate, chop, slice, peel, spread, ingredients, balance, amount, quantity carbohydrate, fruit, vegetables, fibre, protein, dairy, fat, sugar, diet, allergy, vegetarian, vegan
Year 5	**Food Tech : Greek food** **Design a Greek meal that uses a range of ingredients that the Ancient Greeks would have used for a Greek feast in class.** • 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 • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	**Textiles: Sea Creatures** **Design a 3d textile sea creature using reclaimed materials that can be displayed to visitors of our school to raise awareness of the use of plastic and how we all have a responsibility to look after the oceans.** **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	**Mechanical Systems: Cams (Linked to the Nowhere Emporium)** **Design and make a moving cam toy which we can use to showcase the Nowhere Emporium and entertain younger children.** **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

	Technical Knowledge • Know that a recipe can be adapted by adding or substituting one or more ingredients	• generate, develop, model and communicate their ideas through discussion & annotated sketches **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 **Technical Knowledge** Know that a 3D textiles product can be made from a combination of fabric shapes •	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 • **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 **Technical Knowledge** • know how mechanical systems such as cams are used to create movement Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].
Personalisation and Subject Links	**Main link: History Topic of the Ancient Greeks** Computing – internet research, Greek food. History – Ancient Greece Geography – Where does food come from? English – features of non- fiction e.g. subheadings, diagrams, labels, presenting information. Science – nutrition – a balanced diet.	**Main link: Plastic Pollution (Guided Reading Last Bear)** Computing – internet research to investigate a range of existing products. Maths – measuring with accuracy. English – features of non- fiction e.g. subheadings, diagrams, labels, presenting information.	**Main link: Guided Reading/Writing of Nowhere Emporium** Computing – internet research to investigate a range of existing products. Maths – measuring with accuracy. English – features of non- fiction e.g. subheadings, diagrams, labels, presenting information.
vocab	design process, design decisions, design specification, design brief, design criteria, evaluate, mock-up, prototype, modify, adapt, annotate, plan of construction, annotated sketch, exploded diagram, cross-sectional diagram, authentic, functional, functionality, innovative, affordability, appeal, intended user, purpose, function, research, innovation names of components, tools and materials used		
	Hygiene, Food safety, Equipment, Utensils, Techniques, Ingredients, Sweet, Sour, Taste, Hot, Spicy, Fresh, Savoury, Edible, Grown, Reared, Tinned, Frozen, Seasonal, Recipe, Nutritional information, Calories, Harvested, spice, herbs, fat, dough, knead, proof, names of food groups, vitamins, fibre, allergen, allergy, intolerance, vegan, vegetarian, source, combine	names of textiles and fastenings used seam, seam allowance, hem, Press stud, Embellish, Evaluation, Material, Fastenings, Decoration, reinforce, pattern pieces, durability, right/wrong side	Round, Egg-shaped, Ellipse, Eccentric, Snail, Hexagon, Cam, Follower, Slider, Handle, action
Year 6	**Mechanisms & structures:** **Theme Park: Moving Features** **Design a moving theme park ride that is coded and controlled for a Christmas market.**	**Food Tech: Food from around the world** **Design a healthy, well-balanced meal that is from a chosen country for an in-class food festival.**	**3D printing unit** **Design a leaver's keyring that is 3D printed for Year 6 children as a end of year gift.**

	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 • 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.	**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 **Make** • select from and use a wider range of tools and equipment to perform practical tasks • select from and use a wider range of ingredients **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** • 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. Know that a recipe can be adapted by adding or substituting one or more ingredients	**Design** • use research and develop design criteria to inform the design of 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 and computer-aided design **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** • Explore and adapt their ideas using CAD.
Personalis	Link to computing (coding with Crumble)	Link: Geography	Link: transition to high school

ation and Subject Links			
vocab	design decisions, design specification, design brief, design criteria, evaluate, mock-up, prototype, modify, adapt, annotate, plan of construction, annotated sketch, exploded diagram, cross-sectional diagram, authentic, functional, functionality, innovative, affordability, appeal, intended user, purpose, function, research, innovation names of components, tools and materials used		
	tilt switch, bulb (holder), battery (holder), wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, series circuit, parallel circuit frame structure, shell structure, stiffen, strengthen, reinforce, stability, shape, score, tab, temporary, permanent, join, joint vocab associated with computer coding & CAD	ingredients,, food groups, vitamins, nutrients, nutrition, healthy, varied, edible, calories, nutritional information, allergy, intolerance, source, seasonal, grown, reared, harvested, farmed, caught, fresh, dried, utensils,, fold, ,knead,, bake	