Menston Primary School Design Technology Long-Term Overview

Our DT units are based on 4 units across each year group - Structures, Mechanisms, Food Tech and Textiles. Each unit is 4 lessons long. At Menston, we ensure Food tech, textiles and structures is taught over the phase. Mechanisms being taught in most year groups. For KS2, we ensure that there is taught knowledge and skills linked to STEM and the Digital World over the 4-year groups. Across school, we ensure that there is full coverage of the knowledge and skills outlined in the National curriculum and also clear progression for children.
Our planning is based on subject specialist planning from KAPOW apart from the Year 2 PlanBee structures unit, which is still in line with our curriculum progression.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn Term	Structures: **Junk Modelling** Exploring materials through junk modelling, children develop their scissor skills and awareness of different materials and joining techniques. Children begin to make verbal plans and material choices before starting and problem solve while making their model.	Textiles: ***Puppets*** Explore different ways of joining fabrics before creating hand puppets based upon characters from a well-known fairytale. Develop technical skills of cutting, glueing, stapling and pinning.	Structures: **Baby Bears Chair** Using the tale of Goldilocks and the Three Bears as inspiration, pupils help Baby Bear by making him a brand-new chair, exploring different shapes and materials. When designing the chair, they consider his needs and what he likes.	Structures-**Pavilions from Year 4.** Exploring pavilion structures, learning about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding.	STEM- **Electrical systems- Torches** Pupils apply their scientific understanding of electrical circuits to create a torch made from recycled and reclaimed materials and objects. They design and evaluate their product against set design criteria.	STEM-**Doodlers** Explore series circuits further and introduce motors. Explore how the design cycle can be approached at a different starting point, by investigating an existing product, which uses a motor, to encourage pupils to problem-solve and work out how the product has been constructed, ready to develop their own.	Mechanisms: **Automata toys** Use woodworking skills, pupils construct an automata; measuring and cutting their materials, assembling the frame, choosing cams and designing the characters that sit on the followers to form an interactive shop display.
NC mapping **In bold- Technical knowledge NC link.** Other-	-Develop small motor skills so that they can use a range of tools competently, safely and confidently. -Explore, use and refine a variety of	Design purposeful, functional, appealing products for themselves and other users based on design criteria.	Build structures, exploring how they can be made stronger, stiffer and more stable. Design purposeful, functional, appealing products for	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Use research and develop design criteria to inform the design	Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use electrical	Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. Use research and develop design

Links to other parts of NC	artistic effects to express ideas and feelings. -Return to and build on their previous learning, refining ideas and developing their ability to represent them. -Create collaboratively, sharing ideas, resources and skills.	Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. 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 their ideas and products against design criteria.	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 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 their ideas and products against design criteria.	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 computeraided design. 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Investigate and analyse a range of existing products.	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 computeraided design. 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 wide range of materials and components, including construction materials, textiles and ingredients, according	systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. 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. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Investigate and analyse a range of existing products.	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. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design

				Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.	to their characteristics. 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.	Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.	criteria and consider the views of others to improve their work.
Vocabulary	N/A	Decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template	Design criteria, man-made, natural, properties, structure, stable, shape, model, test	3D shapes, Design criteria, Natural, Cladding, Innovative, Reinforce, Structure	Battery, bulb, buzzer, conductor, circuit, circuit diagram, electricity, insulator, series circuit, switch, component, design, design criteria, diagram, evaluation, LED, model, shape, target audience, input, recyclable, theme, aesthetics, assemble, equipment, ingredients, packaging, properties, sketch, test	circuit component configuration, current, develop DIY, investigate, motor, motorised problem solve, product analysis, series circuit, stable target user	Accurate, assembly-diagram, automata, Axle, bench hook, cam, clamp, component, cutting list, diagram, dowel, drill bits, exploded-diagram, finish, follower, frame, function, hand drill, jelutong, linkage, mark out, measure, mechanism, model, research, right-angle, set square, tenon saw
Links (D.T. across school)	Art craft and design unit-joining materials. Plan, Do, Review in continuous provision.						

Commentary	This unit builds on children's prior knowledge of junk modelling from Nursery. They will continue to focus on their scissors skills and manage a better way to effectively hold a pair of scissors. It will link in with current learning of Plan, Do and Review with how to make plans about what they want to make and then reflecting critically. This unit prepares them for individual creations during continuous provision and being more independent with their thinking and learning.	This unit builds upon the children's knowledge of how to hold a pencil and use a range of small tools. The children will use a plastic needle and a basic running stitch to join two pieces of fabric together. This unit prepares children for their Year 3 unit in textiles where they make a cushions and practise their cross stitch technique.	This unit builds on child's knowledge of different materials and which materials would be the most effective. They will have an opportunity to design and evaluate their own products. This unit will prepare children for their structures unit in Year 3.	This unit builds on the child's learning about building a strong, stiff and stable structure in Year 2. The children will apply their knowledge to create more complex structures. This unit will link into their knowledge of 3D shapes in Maths. This unit will prepare the children for their unit in Year 5 on bridges.	This unit builds on the children's experience of using electronic devices through the school. It is the start of the children's learning on electrical circuits in Design Technology. It links with their learning in Science on how circuits are made. This unit prepares children for their Year 5 unit of exploring series circuits further by introducing a motor.	This unit builds on Year 4 introductory STEM project on torches. Children will expand their knowledge from standard circuits to circuits that have a motor. This unit helps children to problem solve and think critically which will be useful for the Year 6 units.	This unit builds on children's learning throughout their Menston journey. They need to draw upon their knowledge of axels and begin to understand that mechanisms, like cams, have different shapes that create different movements. They also need to understand how to make structures sturdier.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Spring	Food Tech- ***Soup*.** Learning about vegetables and where they come from while preparing to make a soup. Children describe the taste of a range of vegetables and design a soup recipe as a class. They practise cutting skills and prepare the vegetables for their class soup before testing the final product.	Food Technology- **Making smoothies** Handle and explore fruits and vegetables and learn how to identify which category they fall into, before undertaking taste testing to establish chosen ingredients for a smoothie they will make, with accompanying packaging.	Mechanisms: ***Making a moving monster*** After learning the terms: pivot, lever and linkage, pupils design a monster that will move using a linkage mechanism. Pupils practise making linkages and experiment with various materials to bring their monsters to life.	Textiles: ***Cross stitch and applique.*** ***Making cushions.*** Introduce two new skills to add to the pupils' repertoire: cross stitch and appliqué. Pupils apply their knowledge to the design, decoration and assembly of their own cushions or Egyptian collars.	*Food tech-***Soup** Design and make a healthy soup using seasonal food making healthy eating choices.	Food tech- **What could be healthier?** Research and modify a traditional bolognese sauce recipe to make it healthier. Cook improved versions, creating appropriate packaging and learn about where the ingredients the importance of animal welfare when farming cattle.	Textiles**- Stuffed toys** Create a stuffed toy by applying skills learnt in previous units. Introduce blanket stitch.
NC mapping	-Learn new vocabulary. -Use new vocabulary throughout the day -Know and talk about the different factors that support their overall health and wellbeing: healthy eating. -Develop small motor skills so that they can use a range of tools	Understand where food comes from. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Select from and use a range of tools and	Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. Design purposeful, functional, appealing products for themselves and other users based on design criteria. Generate, develop, model and	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	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.	Apply their understanding of computing to program, monitor and control their products. 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.	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,

	competently, safely and confidently. -Explore the natural world around them. -Explore, use and refine a variety of artistic effects to express ideas and feelings	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 their ideas and products against design criteria.	communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology. 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. Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria.	discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. Evaluate their ideas and products against their own design criteria		Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. 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	cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. 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 Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others

				and consider the views of others to improve their work.		individuals in design and technology have helped shape the world.	to improve their work.
Vocabulary	N/A	Fruit, vegetable, seed, leaf, root, stem, smoothie, healthy, carton, design, flavour, peel, slice	Axle, design criteria, input, linkage, mechanical, output, pivot, wheel.	Appliqué, cross-stitch, design, equipment, fabric, patch, running stitch, thread, seam, texture, knot.	Name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, cook, fresh, savoury, hygienic, edible, grown, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	Beef, reared, processed, ethical, diet, ingredients, supermarket, farm, balanced.	Accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template
Links (D.T. across school)	PSED lessons on healthy eating.						
Commentary	The unit will be the start of children's cooking in school. It links in well to healthy eating and promoting a healthy life which we discuss a lot in our PSED lessons. This unit will prepare children for more healthy eating when they make smoothies in Year 1. This should already have a good base of	This unit builds on the children's ability to use a range of small tools, such as cutler from EYFS. Children may begin to use other tools that allow them to slice, peel, cut and squeeze. They also begin to understand what makes a healthy diet. This unit prepares the children for their next unit in Year 2, making balanced	This unit builds upon the children's knowledge of how to use small tools in EYFS. The children will build on their knowledge of types of mechanism from Year 1. Children will learn what levers are and how they work. This unit prepares children for their Year 4 unit on slingshot cars where they will understand and use mechanical	This unit builds upon the children's knowledge from Year 1 and making puppets. They will learn how to join materials using more complex approaches; cross stitch and applique. This unit prepares children for their textiles unit in Year 6 where they will need to remember these skills.	This unit build upon the children's knowledge of where food comes from and how to use tools safely. Children will begin to develop an understanding of how foods differ between seasons, follow recipes, weigh/measure ingredients and use heat to cook their food. This unit prepares children for their Year 5 unit of	This unit builds upon the children's knowledge of following recipes and cooking. The children will begin to understand how they can create variations within recipes. It will help embed their skills further on where food comes from and start to learn about the importance of packaging on food.	This unit builds on the knowledge of stitches and joining materials together. They will learn what a blanket stitch is and how to do it. They will design their own product and use their new skill to create this effectively using other stitches from previous units too.

	knowledge of what is good and bad for their body.	diet wraps and taste testing food.	systems in their products.		making a traditional bolognese sauce recipe to make it healthier.		

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Summer	Textiles- ***Bookmarks*** Developing fine motor skills through a range of threading activities before moving on to use binka and a needle. Children design a bookmark, considering what to include and why and then follow their designs to complete their bookmarks.	Mechanisms: **Making a moving story book** Learn about the main components of a moving card. Develop understanding of how card can fit into slots and move back and forth.	Food technology: ***A balanced diet- making wraps/pizza wraps*** Explore and learn what forms a balanced diet, pupils will taste test ingredient combinations from different food groups that will inform a wrap design of their choice which will include a healthy mix of protein, vegetables and dairy.	Digital World- **Wearable tech.** Design, code and promote a piece of wearable technology to use in low light conditions, developing their understanding of programming to monitor and control products to solve a design scenario.	Mechanisms: ***Slingshot cars.*** Transform lollipop sticks, wheels, dowel and straws into a moving car. Pupils use a glue gun to construct, make the launch mechanism, design and create the chassis of a vehicle using nets.	Structures- **Bridges** After learning about various types of bridges and exploring how the strength of structures can be affected by the shapes used, create their own bridge and test its durability - using woodworking tools and techniques.	Digital World- **Navigating the World** Program a navigation tool to produce a multifunctional device for trekkers. Combine 3D virtual objects to form a complete product concept in 3D computer-aided design modelling software.

NC mapping	-Develop small motor skills so that they can use a range of tools competently, safely and confidently. -Explore, use and refine a variety of artistic effects to express ideas and feelings. -Return to and build on their previous learning, refining ideas and developing their ability to represent them.	Identify whether a mechanism is a side-to-side slider or an up-and-down slider and determine what movement the mechanism will make. Clearly label drawings to show which parts of their design will move and in which direction. Make a picture, which meets the design criteria, with parts that move purposefully as planned. Evaluate the main strengths and weaknesses of their design and suggest alterations.	Understand where food comes from. Use basic principles of a healthy and varied diet to prepare dishes. Evaluate their ideas and products against design criteria. Explore and evaluate a range of existing products. Design purposeful, functional, appealing products for themselves and other users based on design criteria.	**Apply their understanding of computing to program, monitor and control their products.** 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	**Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].** 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 computeraided design. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.	**Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.** 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. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.	**Apply their understanding of computing to program, monitor and control their products.** 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. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. Evaluate their ideas and products against

				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.	Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. 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.	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 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.	their own design criteria and consider the views of others to improve their work.

Vocabulary	N/A	Sliders, mechanism, adapt, design criteria, design, input, model, template, assemble, test	balanced diet, balance, carbohydrate, dairy, fruit, ingredients, oils, sugar, protein, vegetable, design criteria	Analogue, analyse, Annotate, badge, computer-aided design (CAD), control, design, criteria, develop, digital, digital revolution, digital world, display, electronic, electronic products, fastening Feature, feedback, form, function, initiate, layers, monitor, net, opinion, point of sale, product, product design, program, sense, simulator, smart, technology, test, user.	Chassis, energy, kinetic, mechanism, air resistance, design, structure, graphics, research, model, template.	beam bridge, arch bridge, truss bridge, strength, technique, corrugation, lamination, stiffness, rigid, factors, stability, visual appeal, aesthetics, joints, mark out, hardwood, softwood, wood file/rasp, sandpaper/glasspaper bench hook/vice tenon saw/coping saw, assemble, material properties, reinforce, wood sourcing, evaluate, quality of finish, accuracy.	Smart, smartphone, equipment, navigation, cardinal compass, application (apps), pedometer, GPS tracker, design brief, design criteria, client, function, program, duplicate, replica, loop, variable. Value, if statement, Boolean, corrode, moudable, lightweight, sustainable design, environmentally, friendly, biodegradable, recyclable, product lifecycle, product lifespan.
Links (D.T. across school)				ICT			
Commentary	This unit helps children build on those crucial motor skills they have been practising the past two terms and applying it to this bookmark project. They will know the steps needed to make something from	This unit builds on the child's knowledge of using a variety of materials and knowledge from experimenting with form and function. They will learn about the function of sliders as a mechanism in card and make choices on the most appropriate materials and tools to	This unit builds on the child's knowledge of what a healthy diet is and how to use some basic equipment. They will begin to develop an understanding of where food comes from and how to make healthier	This unit will be the first introduction of the digital world units where children will already have a good understanding of the latest products and technology in our World today. They will start to understand the role IT has in programming	This builds on children's knowledge of mechanical systems from Year 2. Children will build on their knowledge and be introduced to new vocabulary such as chassis. They will look at designs carefully and before making will carefully	This unit builds on the children's learning in Year 2 and 3. They need to draw upon their knowledge of how to build a complex structure that is sturdy, strong and stiff. This unit helps to prepare children for Year 6 when they make automaton toys.	This unit builds on children's prior learning of the digital world in Year 3. They will look at programming again but in more detail. This unit prepares children for the digital world and the new reality of our world as it is today.

	doing plan, do and reviews so will know that the end outcome is not always the main part. This unit gets children ready for their textiles unit in Year 1 when they make puppets.	use in order to create their product. The children will build on their ability to share from EYFS by incorporating technical vocabulary in their explanations. This unit provides children with the knowledge needed so they can use it in Year 2 when they make a moving monster.	choices with foods. This unit prepares the children for their Year 4 unit of making healthy soup.	technology and will have a go at doing their own. This will prepare children for their next unit in Year on programming where they will program a navigation tool to produce a multifunctional device for trekkers.	design a purposeful and effective car.		