Mablethorpe Primary Academy Design and Technology

	Nursery	Reception	Year 1 / 2	Year 3 /4	Year 5 /6
Term 1					
Term 2			**Curriculum focus:** Christmas/religious celebrations and beliefs. **Aspect of D&T:** MECHANISMS **Focus:** Sliders and Levers **Project Title:** Design, make and evaluate a christmas card. **Brief**: This unit will investigate and inform about christmas/religious celebrations (RE link). Focus tasks will introduce children to sliders and levers and develop their understanding of how they work. Children will use their learning to help them design, make and evaluate a suitable Christmas card.		**Curiculum focus:** Electricty links with Science. **Aspect of D&T:** Electrical systems. **Focus:** Monitoring and control. **Project title:** To design, make and evaluate a Security lighting system for our homes. **Brief:** This unit will investigate and inform about electricity with links to Science topic. Focus tasks will introduce children to electrical systems and how they work which will have a strong link to science for a cross

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					curricular approach to the project. Children will apply their knowledge of circuits, switches, conductors and insulators. **Designing** • Develop a design specification for a functional product that responds automatically to changes in the environment. • Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams. **Making** • Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. • Competently select and accurately assemble materials, and securely connect electrical components to produce a

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					reliable, functional product. • Create and modify a computer control program to enable their electrical product to respond to changes in the environment. **Evaluating** • Continually evaluate and modify the working features of the product to match the initial design specification. • Test the system to demonstrate its effectiveness for the intended user and purpose. **Technical knowledge and understanding** • Understand and use electrical systems in their products. • Understand the use of computer control systems in products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project.

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Term 3			**Curriculum focus:** Science and habitats. **Aspect of D&T:** Structures. **Focus:** Hedgehog/birdhouse. **Project Title:** Design, make and evaluate a suitable freestanding structure for a hedgehog's house or birdhouse. **Brief:** Children will look at a variety of different bird houses and discuss the differences in appearance, their functions and what types of birds they attract. They will answer questions relating to what they learn from the slides and what they see on videos. Children will discuss and explore different materials used to build bird houses and any additional	**Curriculum Focus:** Romans. **Aspect of D&T**: Textiles. **Focus**: 2D Shape to 3D Product. **Project Title:** Design, make and evaluate a beach sandal inspired by the romans. **Brief**: Children will have begun to look at the Romans and identify that the military sandals worn by Roman soldiers were called caligae. Caligae were strong and thick-soled sandals. Soft, leather strips were tied around the foot and shins. The soldier's toes were usually left bare. Children will create a pair of sandals inspired by these roman sandals and explore ways to	**Curriculum Focus:** The human body **Aspect of D&T** Textiles. **Focus:** Combining different fabric shapes (including computer aided design). **Project title:** Design, make and evaluate a blood bag project. **Brief:** Children will have begun to look at the human body in science and will be linking their knowledge to an art project this term. Children will use their knowledge of the human body and blood to design, make and evaluate a blood bag-links to art project this term. **Designing** • Generate innovative ideas by carrying

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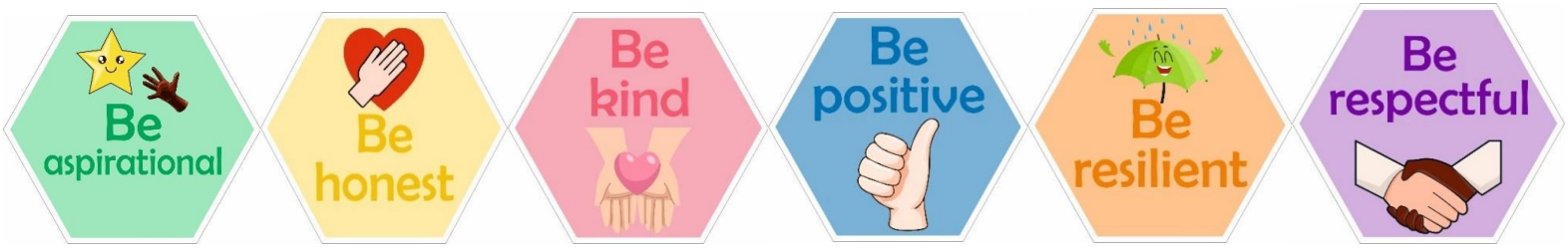

			features that have been added to them. They will be challenged to draw 3-D diagrams or exploded diagrams of different bird houses and discuss why creating a plan beforehand is important. Children will explore and explain the various different woodwork equipment needed to build their bird houses. They will then practice these skills to help learn techniques before building their actual bird house. Children to write a detailed plan and design a bird house with a specific bird in mind. They will need to find information for the birds requirements, decide on materials to use and equipment, think how to decorate it and any additional features as well as consider safety precautions. Children will collect the materials and tools they need and begin construction. Children will evaluate their own design	strengthen and stiffen fabrics and understand how to securely join two pieces of fabric together. Understand the need for patterns and seam allowances whilst Knowing and using technical vocabulary relevant to their project. Children should use their cross curricular knowledge of the romans to inform their design and evaluation of their end product.	out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. **Making** • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.

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			process and finished product. They may either do this individually using an evaluation sheet provided or in small groups.		**Evaluating** • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. **Technical knowledge and understanding.** A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.

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Term 4			**Curriculum focus:** Farming in Lincolnshire (fruit and vegetables) comparison with London and nutrition. **Aspect of D&T**: FOOD **Focus**: Healthy and Varied Diet & preparing fruit and vegetables. **Project Title:** Design, make and evaluate a vegetable dish for a celebration. **Brief:** During this project, children will have the opportunity to work with vegetables and fruit, exploring their flavours and considering where in the world they have come from. They will use their learning about explorers to understand how new flavours and ideas reach the UK and how much of our cooking is inspired by other countries and cultures.		

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			Children will practice their cutting, chopping, slicing and grating skills to use and create a smoothie drink for a celebration. This will then be evaluated by their peers in the school-wide celebration of our fantastic Mablethorpe chefs.		
Term 5				**Curriculum Focus:** The Ancient Egyptians. **D&T Focus:** Food and Varied Diet. **Project title:** To design, make and evaluate an Egyptian flatbread. Links to children's topic of the ancient Egyptians and build on knowledge for their diet and how it is the same/different to what we know about a varied and healthy diet. **Staples**: Bread and beer were staples for	

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				both poor and wealthy Egyptians. Vegetables and to a lesser extent meat, game, and fish were also consumed. **Diet**: The diet mainly consisted of bread, beer, vegetables, and fruits. Meat was a luxury for the wealthy. Provide opportunity for children to understand that food is grown, reared or caught in the UK and across the world. Refer to the eatwell guide for children to gain an understanding of what constitutes a healthy and balanced diet. Understand how to keep healthy and active (food and drink provide energy). Children to be taught to prepare and cook an Egyptian flatbread safely and hygienically and on a heat source. Children will use a range of techniques to make	

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				their flatbread including chopping, slicing, mixing, spreading, kneading and baking.	
Term 6				**Curriculum focus:** The water cycle. **Project title**: Making an information card to explain the Water Cycle. **D&T Focus:** Levers and Linkages. Children will use their knowledge of the water cycle to design, make and evaluate an information card and this will develop the skill and focus of using levers and linkages. Children will be taught about what a lever and linkage are. A lever is a bar that is attached to a pivot.	**Curriculum focus:** Greeks. **Project title:** Design, make and evaluate a project for a modern day olympic stadium inspied by the greeks. **Aspect of D&T:** Structures. **Focus:** Frame Structures. **Brief:** Children will use their knowledge of the greeks and will use inspiration and research to design, make and evaluate a modern day version of an olympic stadium and this project will develop the focus of making frame structures.

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				Depending on the length of the bar, turning the lever is easier or harder. A linkage is a system of links that are joined together to change movement. Children will build upon their learning in KS1 to create an information card which will support children in learning the water cycle. Children will consider how they can use levers to alternate between the different stages of the cycle and how to present this in a way that appeals to their chosen audience. They will investigate current examples of such products and use their learning in Science to support their product.	**Designing** • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. **Making**

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					• Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. • Use finishing and decorative techniques suitable for the product they are designing and making. **Evaluating**

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					• Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Research key events and individuals relevant to frame structures. **Technical knowledge and understanding** • Understand how to

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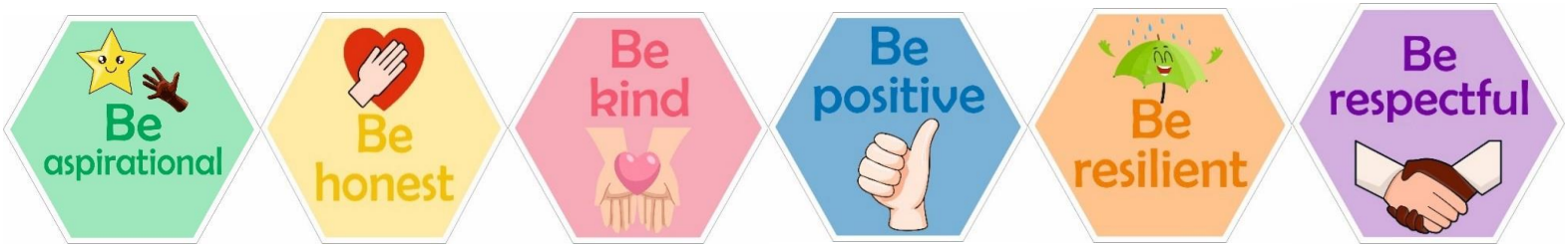

					strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the project.

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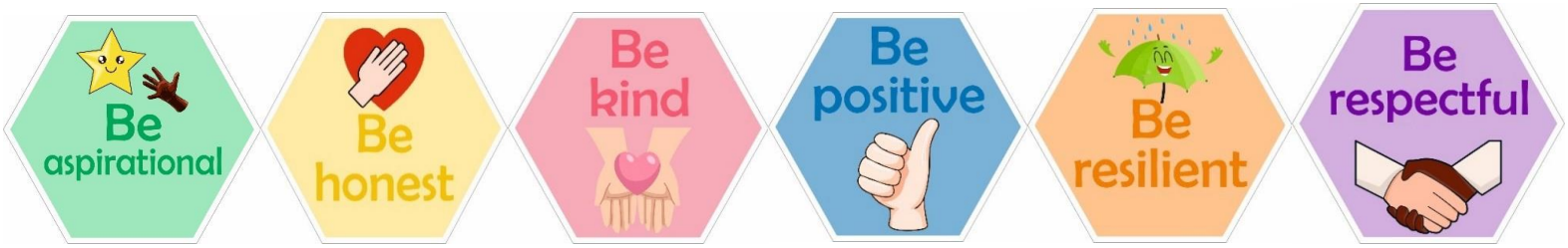

	Nursery	Reception	Year 1 / 2	Year 3 /4	Year 5 /6
Term 1			**Curriculum focus:** Special places. **Aspect of D&T:** Mechanisms. **Focus:** Wheels and axel. **Project title**: To design, make and evaluate a carnival float inspired by special places. **Brief:** This unit will investigate and evaluate wheeled products used in everyday life. Focused tasks will develop children's understanding of how wheels and axles are assembled as either fixed or free axles. Children will be taught how to mark out, hold, cut, join and materials and components correctly. They will use their learning to design, make and evaluate a carnival float vehicle that can be used at a local carnival inspired by special places.		

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			Designing Design a functional and appealing product for a chosen user and purpose based on simple design criteria. Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. **Making** Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. Select from and use textiles according to their characteristics. **Evaluating**		

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			Explore and evaluate a range of existing textile products relevant to the project being undertaken. Evaluate their ideas throughout and their final products against original design criteria. **Technical knowledge and understanding.** Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. Explore different finishing techniques e.g. using		

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			painting, fabric crayons, stitching, sequins, buttons and ribbons. Know and use technical vocabulary relevant to the project.		
Term 2				**Curriculum focus:** Greta Thunberg and David Attenborough. **Aspect of D&T:** Structures. **Focus:** Shell structures. **Project title:** To design make and evaluate a disposable/recyclable lunchbox using Greta Thunberg as inspiration and linking to learning on recycling. **Brief:**	**Curriculum focus:** Mayans. **Aspect of D&T:** Food. **Focus:** Celebrating culture and seasonality. **Project title:** Design, make and evaluate a flavoured bread/tortilla that celebrates culture, seasonality and creativity. **Brief:** Children will explore how creativity isn't

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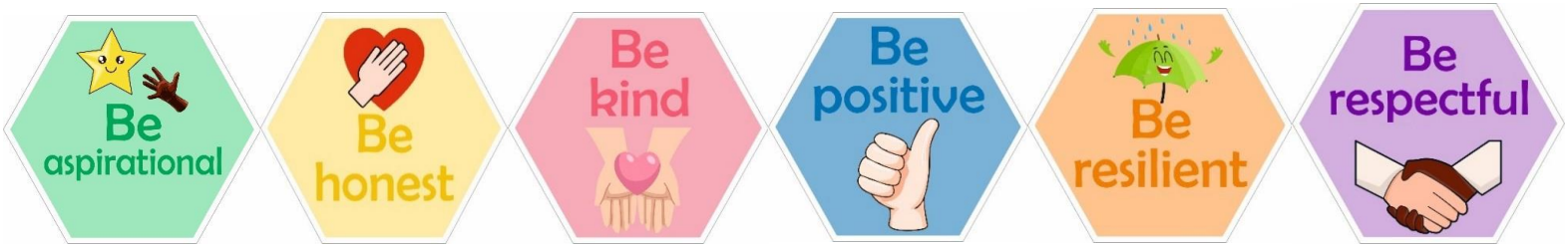

				Children will design, make and evaluate recyclable materials and use knowledge about the issues for the environment outlined by Greta Thunberg to inspire a disposable/recyclable lunch box that could be used at school. Children will gain the knowledge that a shell structure is hollow and explore a range of these structures. They will understand that the outer layer of a shell structure is very strong, so it can stay upright. Children will learn that these structures can protect and contain different things. Children will then use this background knowledge to create their shell structured product of a lunchbox that could be used by their friends and family. **Designing**	expressed solely through drawing or painting mediums. They will consider how the earliest form of creativity could be considered cooking and the impact this has in many religions and cultures. Using their learning from R.E and history (mayans) children will create breads flavoured in different ways to represent these cultures and religions. **Designing** Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification. Explore a range of initial ideas, and make design decisions to develop a final product linked to user and

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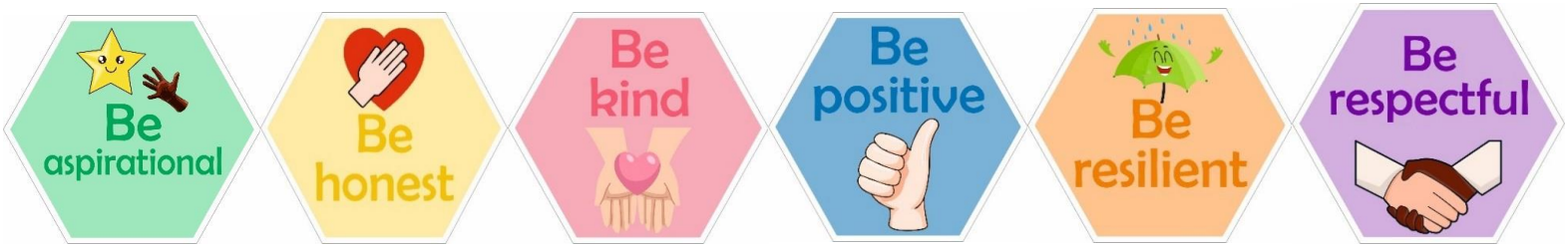

				Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. **Making** Order the main stages of making. Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. Explain their choice of materials according to functional properties and aesthetic qualities. Use finishing techniques	purpose. Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. **Making** Write a step-by-step recipe, including a list of ingredients, equipment and utensils. Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. Make, decorate and present the food product appropriately for the intended user and purpose.

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				suitable for the product they are creating. **Evaluating** Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. Test and evaluate their own products against design criteria and the intended user and purpose. **Technical knowledge and understanding.** Develop and use knowledge of how to construct strong, stiff shell structures. Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more	**Evaluating** Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. Understand how key chefs have influenced eating habits to promote varied and healthy diets. **Technical knowledge and understanding** Know how to use utensils

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				complex 3D shapes. Know and use technical vocabulary relevant to the project.	and equipment including heat sources to prepare and cook food. Understand about seasonality in relation to food products and the source of different food products. Know and use relevant technical and sensory vocabulary.
Term 3			**Curriculum focus:** Beatrix Potter. **Aspect of D&T:** Textiles. **Focus:** Templates and joining techniques. **Project Title:** To design, make and evaluate a finger puppet inspired by Beatrix Potter. **Brief:**		**Curriculum focus:** Mayans. **Aspect of D&T:** ELECTRICAL SYSTEMS **Focus:** More complex switches and circuits . **Project Title:** To work collaboratively to design, make and evaluate an electrical board game to share information and help

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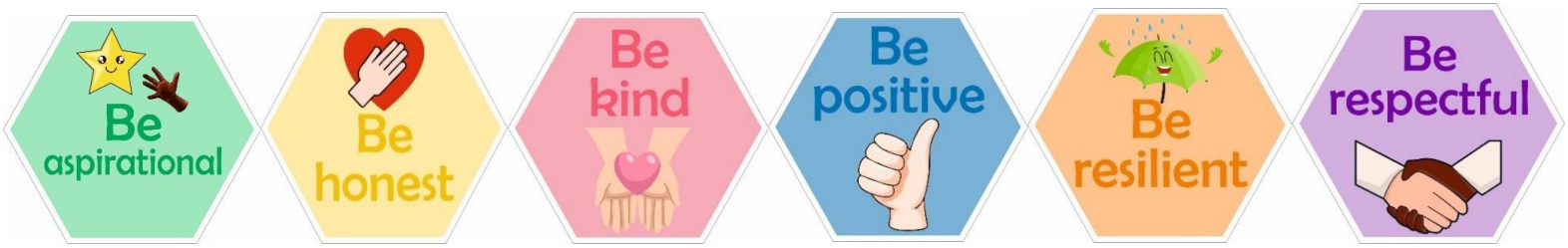

			Children design, make and evaluate a finger puppet, considering the consumer and products currently on the market, making alterations and improvements to their design considering the intended consumer. Children will make investigations into a range of fabrics and their suitability for the product they are designing to make. Children will explore and decide on an appropriate joining technique (stitch) for the design of their puppet. **Designing** Design a functional and appealing product for a chosen user and purpose based on simple design criteria. Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and		educate others about the Mayans. **Brief:** In this unit children will investigate and explore electrical board games and compare these with traditional board games. Children will use their learning alongside their previous learning in science. They will use electrical systems to create an input and output, warning the princess to awake. Children will strengthen their understanding of programming and circuits through investigative and focused activities **Designing** Use research to develop a design specification for a functional product that responds automatically to

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			information and communication technology. **Making** Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. Select from and use textiles according to their characteristics. **Evaluating** Explore and evaluate a range of existing textile products relevant to the project being undertaken. Evaluate their ideas throughout and their final products against original design criteria.		changes in the environment. Take account of constraints including time, resources and cost. Generate and develop innovative ideas and share and clarify these through discussion. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. **Making** Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. Competently select and accurately assemble materials, and securely connect electrical

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			Technical knowledge and understanding. Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. Know and use technical vocabulary relevant to the project.		components to produce a reliable, functional product. Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment. **Evaluating** Continually evaluate and modify the working features of the product to match the initial design specification. Test the system to demonstrate its effectiveness for the intended user and purpose. Investigate famous inventors who developed

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					ground-breaking electrical systems and components. **Technical knowledge and understanding.** Understand and use electrical systems in their products. Apply their understanding of computing to program, monitor and control their products. Know and use technical vocabulary relevant to the project.
Term 4				**Curriculum focus:** Science- light. **Aspect of D&T:** Electrical systems **Focus:** Circuits and switches	

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				Project title: To design, make and evaluate a torch to create a light source. **Brief**: Children will explore links to science this term and develop the understanding that they need light in order to see things and that darkness is the absence of light. Children will develop a knowledge of circuits and switches and use this knowledge to design, make and evaluate a light source in the form of a light. Children will look at different light sources and use ideas from these to create a torch with a particular consumer in mind. **Designing** Gather information about needs and wants, and develop design criteria to inform the design of	

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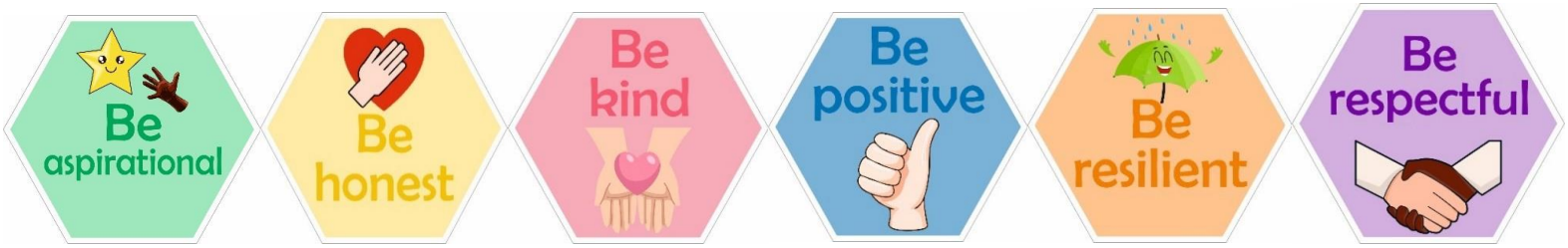

				products that are fit for purpose, aimed at particular individuals or groups. Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. **Making** Order the main stages of making. Select from and use tools and equipment to cut, shape, join and finish with some accuracy. Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic	

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				qualities. **Evaluating** Investigate and analyse a range of existing battery-powered products. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. **Technical knowledge and understanding.** Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. Apply their understanding of computing to program and control their products. Know and use technical	

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				vocabulary relevant to the project.	
Term 5			**Curriculum focus:** Farm to fork. **Aspect of D&T:** Food **Focus:** Healthy and varied diet & preparing fruit and vegetables. **Project title:** To design, make and evaluate a fruit and vegetable kebab and suitable and creative packaging inspired by healthy eating and farms. **Brief:** Children will design, make and evaluate a fruit/vegetable kebab inspired by what they have learnt about healthy eating and consider the foods that they will use inspired by their learning about farms. Children will design, make and evaluate appropriate packaging that will be suitable for extending shelf life and attract the consumer.	**Curriculum Focus:** Anglo Saxon and Scotts. **Aspect of D&T:** Food **Focus:** Healthy and varied diet. **Project title:** To design, make and evaluate a healthy and balanced meal for an Anglo Saxon celebration. **Brief:** Children will make links to their science learning in this unit. To identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Making links to the Anglo Saxons and exploring	**Curriculum focus:** Science- Space race. **Aspect of D&T:** Mechanisms **Focus:** Pulleys and Gears. **Project title:** Design, make and evaluate a mechanical system that shows the movement of the Earth, and other planets, relative to the Sun in the solar system. **Brief:** In this unit children will design, make and evaluate a mechanical system developing the knowledge of pulleys and gears to create a learning tool that will support other children in understanding the movement of the Earth, and

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			Designing Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. Communicate these ideas through talk and drawings. **Making** Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. Select from a range of fruit and vegetables according to their characteristics e.g colour, texture and taste to create a chosen product.	seasonality of different foods and how different types of foods that they might use are grown, reared, caught and processed. Children will use their knowledge to design, make and evaluate a meal that would support a varied and balanced diet for an Anglo Saxon celebration. **Designing** Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to	other planets, relative to the Sun in the solar system. This project will support children's learning in science for space and planets. Children will learn about Pulleys and gears and decide how they can use these skills to make their learning tool and will research similar designs to give them inspiration when developing their product, keeping in mind the potential consumer. **Designing** Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources. Develop a simple design specification to guide their thinking.

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			Evaluating Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. Evaluate ideas and finished products against design criteria, including intended user and purpose. **Technical knowledge and understanding** Understand where a range of fruit and vegetables come from e.g farmed or grown at home. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of the eatwell plate. Know and use technical and	develop and communicate ideas. **Making** Plan the main stages of a recipe, listing ingredients, utensils and equipment. Select and use appropriate utensils and equipment to prepare and combine ingredients. Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. **Evaluating** Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.	Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. **Making** Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. **Evaluating** Compare the final product to the original design

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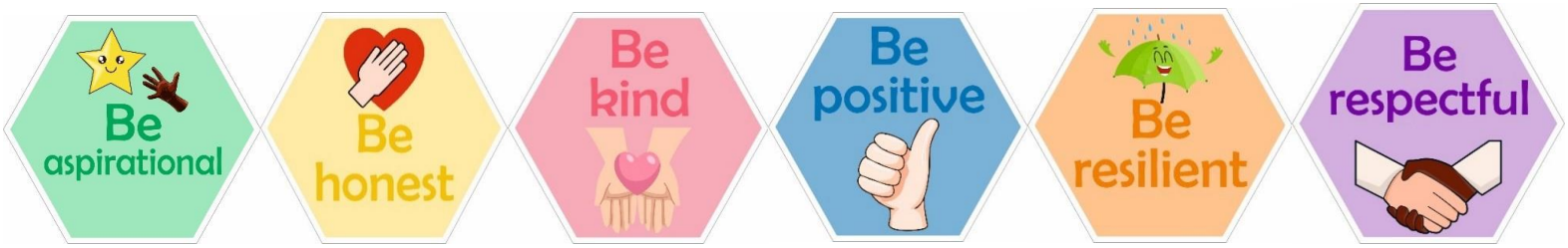

			sensory vocabulary relevant to the project.	Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. **Technical knowledge and understanding.** Know how to use appropriate equipment and utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. Know and use relevant technical and sensory vocabulary appropriately.	specification. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Investigate famous manufacturing and engineering companies relevant to the project. **Technical knowledge and understanding.** Understand that mechanical and electrical systems have an input, process and an output.

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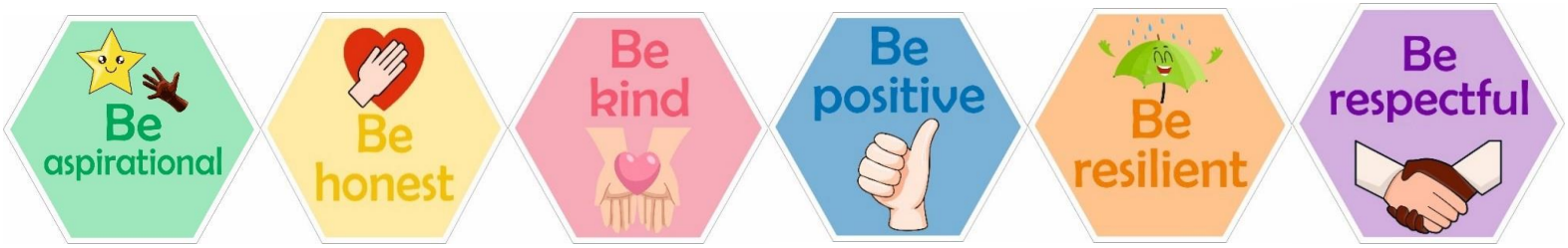

					Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. Know and use technical vocabulary relevant to the project.
Term 6					