Manland Primary School- Design and Technology Curriculum Intent

<table>
<tr><td colspan="4">Purpose of Study

A Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.</td></tr>
<tr><td colspan="4">Aims

The national curriculum for design and technology aims to ensure that all pupils: develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. To build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users. To critique, evaluate and test their ideas and products and the work of others and to understand and apply the principles of nutrition and learn how to cook.</td></tr>
<tr><td>Reception</td><td colspan="3">The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. Children in Reception will develop the prerequisite skills they need to access the Key Stage 1 Design and Technology Curriculum through a range of activities. These include both taught sessions and access to continuous provision.</td></tr>
<tr><td></td><td>Early Learning Goals that link to Design and Technology:

ELG Creating with materials
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.

ELG Fine motor
Use a range of small tools, including scissors, paintbrushes and cutlery.</td><td>Children will:

• Make their own creations using a wide range of different materials, fixings and tools which are freely available in continuous provision.
• Use tools such as scissors, hole punch, string, sellotape, cutters etc.
• Talk about what they would like to make, how they will do it and what they think about it when it is finished.
• Evaluate what they have made and make changes as appropriate.
• Choose healthy foods to make a recipe.</td><td>Children will know that:

• To make a product, they will need to plan and use resources.
• There are different ways to join materials
• What healthy food choices are

Key Vocab:
Healthy, make, tool, plan, test, change, join, material, recipe</td></tr>
</table>

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	Begin to show accuracy and care when drawing.		
	Autumn	Spring	Summer
Year 1	**Eat more fruit and vegetables** **National Curriculum Content Area:** Cooking and Nutrition To use the basic principles of a healthy and varied diet. To prepare dishes and understand where food comes from. **Pupils will know** • The names of variety of fruits and vegetables. • That some fruits and vegetables need to be washed, cut, cored, peeled or grated before they can be eaten. • The principles of basic food hygiene, e.g. washing hands, tying long hair back and keeping surfaces clean. **Pupils will learn to:** • To find out the favourite fruits and vegetables and present data in a pictogram. • To examine, taste and describe a variety of fruits and vegetables.	**Mechanical Systems - Moving Minibeasts** **National Curriculum Content Area:** Technical knowledge To build structures, exploring how they can be made stronger, stiffer and more stable. To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. **Pupils will know:** • What a pivot and lever are. • The type of movement a mechanism produces. • That we can evaluate my finished moving minibeast picture by identifying things that worked well and things that need improving. **Pupils will learn to:** • To create a sliding mechanism. • To use levers and pivots to create a moving mechanism. • To create a wheel mechanism. • To design a picture with a moving mechanism.	**Stable Structures** **National Curriculum Content Area:** Technical knowledge To build structures, exploring how they can be made stronger, stiffer and more stable. To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. **Pupils will know:** • What the word 'stable' means. • Some ways to make a structure more stable. • A set of given criteria to evaluate my finished product against **Pupils will learn to:** • To explore the features of stable structures, including toy car garages. • To design and plan a stable structure. • To explore a range of materials and make decisions. • based on the end product. • To follow a design plan and make a product.

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	• To find out how to handle and prepare a variety of fruits and vegetables. • To be able to design a recipe to include fruit and/or vegetables. • To be able to make and evaluate a food product based on a design. **Key Vocabulary** Peel, grate, core, nutrient, chop, slice, assemble, hygiene, ingredients, filling, diet, origin	• To make a minibeast-themed moving picture. • To evaluate a moving minibeast picture. **Key Vocabulary** pivot, lever, slider, mechanism, movement, purpose, design	• To evaluate products. **Key Vocabulary** stable, structure, criteria, strengthen, design, product, stiffer .
Year 2	**Textiles - Puppets** **National Curriculum Content Area:** Make To select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. To select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. **Pupils will know:** • That two pieces of fabric can be joined by using a range of stitches. • That you can make a finger puppet by sticking pieces of felt together. • That stitches need to be small enough to ensure there are no gaps.	**Cooking and Nutrition - Perfect Pizzas** **National Curriculum Content Area:** Cooking and Nutrition To use the basic principles of a healthy and varied diet. To prepare dishes. To understand where food comes from. **Pupils will know:** • A variety of pizza toppings. • The names of different types of bread • Which food group a variety of pizza toppings belong to • Why each of the food groups is important for a balanced diet. **Pupils will learn to:** • To find out what the favourite pizzas in the class are. • To examine, describe and categorise a variety of bread-based products.	**Mechanical Systems - Vehicles** **National Curriculum Content Area:** Technical knowledge To build structures, exploring how they can be made stronger, stiffer and more stable To explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. **Pupils will know:** • What an axle is. • What a chassis is. • What the parts are of a vehicle **Pupils will learn to:** • To investigate a variety of vehicles and their uses and features. • To investigate wheels, axles and chassis. • To investigate ways of creating and decorating the body of a vehicle.

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	• Evaluating a product will identify what went well and what could be improved. **Pupils will learn to:** • To investigate a range of puppets and their features • To be able to work with fabric to create a finger puppet. • To develop and practise sewing skills. • To be able to design a glove puppet. • To be able to follow a design to make a puppet. • To be able to evaluate a finished product. **Key Vocabulary** Button, puppet, running stitch, blanket stitch, features, felt, fabric, template, mock up.	• To examine, describe and categorise a variety of pizza toppings. • To design a balanced healthy pizza. • To be able to make and evaluate a food product based on a design. **Key Vocabulary** Evaluate, topping, plant products, animal products, criteria, healthy, crumbly crusty elastic, springy, bland, soft, smooth, rough, salty, sweet	• To design a vehicle. • To make a vehicle based on a design. • To evaluate a finished product. **Key Vocabulary** Vehicle, chassis, axle, evaluate, criteria, features, evaluate, mechanism, equipment, resources.
Year 3	**Mechanical Systems –Storybooks** **National Curriculum Content Area:** Design To 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. To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-	**Inventions and Achievements - British Inventors** **National Curriculum Content Area:** Evaluate To investigate and analyse a range of existing products. To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. To understand how key events and individuals in design and technology have helped shape the world.	**Programming and Electrical Systems - Light up signs** **National Curriculum Content Area:** Technical knowledge To apply their understanding of how to strengthen, stiffen and reinforce more complex structures. To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. To understand and use electrical systems in their products [for example, series

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	sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Pupils will know:** • Storybooks can contain moving pictures. • Moving wheel mechanisms can create different effects. • There are different styles of fonts and they can create different effects. **Pupils will learn to:** • To investigate and evaluate products with lever and linkage systems. • To experiment with a range of techniques to create moving mechanisms. • To explore and experiment with a range of different fonts and graphic techniques. • To be able to plan and design a storybook. • To be able to make a storybook with moving mechanisms using a design. • To be able to evaluate a finished product. **Key Vocabulary** Font, graphic design features, mechanism, effectiveness, moving picture,	**Pupils will know:** • That Mackintosh was a famous inventor. • A number of Mackintosh's inventions. • That the invention of the internet has changed the world **Pupils will learn to:** • To investigate the invention of the telephone. • To investigate the invention of the World Wide Web. • To explore how the invention of reinforced concrete works. • To investigate the invention of the mackintosh. • To reflect on the impacts that inventions have had on our lives. **Key Vocabulary** Internet, World Wide Web, Mackintosh, invention, inventor, impervious, raincoat, waterproof, coating, chemist.	circuits incorporating switches, bulbs, buzzers and motors]. To apply their understanding of computing to program, monitor and control their products. **Pupils will know:** • The difference between an LED and an incandescent light bulb. • How a simple electrical circuit works. **Pupils will learn to:** • To investigate and analyse illuminated signs. • To understand how LEDs may be used instead of traditional incandescent bulbs in series circuits. • To develop ideas for a decorative illuminated sign. • To select and use tools, equipment, materials and components to make the enclosure of a decorative illuminated sign. • To construct a working circuit with one or more lights, and fit it in a decorative illuminated sign. • To investigate ways in which computers can be used to program and control lights in a product. **Key Vocabulary** Simple circuit, incandescent bulbs, switch, LED bulb, resistor, LED lights.

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Year 4	**Textiles – Seasonal stockings** **National Curriculum Content Area:** Make To select from and use a wider range of tools and equipment to perform practical tasks, [for example, cutting, shaping, joining and finishing], accurately. To 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. **Pupils will know:** • A variety of decorative techniques • A number of different stitches, such as: running stick, back stitch, overstitch and zigzag stitch. **Pupils will learn to:** • To explore and analyse existing products • To explore different ways to join fabric using sewing skills. • To explore different ways to decorate fabric using sewing skills. • To design a Christmas stocking. • To use sewing skills to make a Christmas stocking. • To evaluate a finished product. **Key Vocabulary**	**Stable Structures -Making mini greenhouses** **National Curriculum Content Area:** Technical knowledge To apply their understanding of how to strengthen, stiffen and reinforce more complex structures. To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. To understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. To apply their understanding of computing to program, monitor and control their products. **Pupils will know:** • What the features are of greenhouses. • What the word 'stable' means. • How to make a structure more stable. • A set of given criteria against which to evaluate the finished product. • A range of a range of materials that are useful for a particular project. **Pupils will learn to:** • To explore existing greenhouses. • To investigate stable structures. • To investigate materials for making a mini greenhouse. • To design a mini greenhouse. • To make a mini greenhouse.	**Cooking and Nutrition** - **Seasonal food** **National Curriculum Content Area:** Cooking and Nutrition To understand and apply the principles of a healthy and varied diet. To prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. **Pupils will know:** • What the term 'seasonal food' means. • That different parts of the world have different seasonal food. • The benefits and problems of unseasonal food being available in shops all year round. • That some foods, like wheat, are available all year round in the UK. • A variety of cooking skills including slicing, dicing, beating, whisking, folding, sieving, rolling and grating. • That food producers can speed up or slow down the ripening process to make fruits and vegetables • Some of the nutrients we get from fruits, vegetables, meat, fish and dairy products.

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	design, improve, template, textiles, running stitch, purpose, evaluate, product, running stick, back stitch, overstitch, zigzag stitch	• To evaluate a finished product. **Key Vocabulary** Design, stable, reinforce, investigate, strength, evaluate, curved, base, surface, greenhouse.	• When certain meats are in season in the UK and which are available all year round. • That some vegetarian options that provide the same nutrients as meat. **Pupils will learn to:** • To cook using British ingredients available all year round. • To know how seasonal fruits in Britain are grown and processed. • To understand why vegetables, form an important part of a healthy and varied diet. • To find out about how seasonally produced meat can form part of a healthy diet. • To know how fish are caught or reared, processed and used in healthy meals. • To show what you have learned about eating seasonal food as part of a healthy, varied diet. **Key Vocabulary** Slicing, dicing, beating, whisking, folding, sieving, rolling, grating, seasonal, menu, vegetarian, nutrient
Year 5	**Stable Structures -Building Bridges** **National Curriculum Content Area:** Technical knowledge	**Inventions and Achievements - Chinese Inventions** **National Curriculum Content Area:** Evaluate	**Textiles - Fashion and textiles** **National Curriculum Content Area:** Make

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	To apply their understanding of how to strengthen, stiffen and reinforce more complex structures. To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. To understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. To apply their understanding of computing to program, monitor and control their products. **Pupils will know:** • What beams and pillars are and how they are used in bridge construction. • What a truss is and how trusses make bridges stronger • How arches work to make bridges stronger. **Pupils will learn to:** • To explore ways in which pillars and beams are used to span gaps. • To explore ways in which trusses can be used to strengthen bridges. • To explore ways in which arches are used to strengthen bridges. • To understand how suspension bridges are able to span long distances. • To develop criteria and design a prototype bridge for a purpose.	To investigate and analyse a range of existing products. To evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. To understand how key events and individuals in design and technology have helped shape the world. **Pupils will know:** • The traditional method for making paper. • How gunpowder was invented. • What water-powered machines are and how they helped change the world • Why kites were first invented and how they were made. **Pupils will learn to:** • To understand how the four great inventions of China shaped the world. • To investigate water-powered machines. • To build and test prototype kites. • To design a kite based on design criteria. • To make and evaluate a kite. **Key Vocabulary** Compass, gunpowder, evaluate, kite, prototype, hanging/floating compass, absorbency, opacity, structure, recycled, effectiveness, material.	To select from and use a wider range of tools and equipment to perform practical tasks, [for example, cutting, shaping, joining and finishing], accurately. To 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. **Pupils will know:** • That products that are woven together are called textiles. • The process of turning raw cotton into cloth • That different textiles have different properties • What the job of a fashion designer entails. • What a pattern piece is and why they are important when designing a garment. **Pupils will learn to:** • To investigate and analyse items made using textiles: the materials used and how they are made. • To explore some ways in which textiles are joined and decorated. • To design an item made using textiles, and draw pattern pieces. • To use pattern pieces to measure, mark and cut fabric; to sew design elements according to a design.

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	• To analyse and evaluate products according to design criteria. **Key Vocabulary** Suspension, design, scale, criteria, arch heights, suspension, prototype, span, truss bridge		• To join fabric pieces by hand sewing. • To sew hems on an item made using textiles; to add design details. **Key Vocabulary** straight stitch, zigzag stitch, whip/blanket stitch, blind stitch, buttonhole stitch and overlock, applique, embroidery
Year 6	**Cooking and Nutrition - Burgers** **National Curriculum Content Area:** Cooking and Nutrition To understand and apply the principles of a healthy and varied diet. To prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. To understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. **Pupils will know:** • That most foods we buy have nutrition labels to help us make informed choices about what we eat. • That calories come from fats, proteins and carbohydrates.	**Stable Structures -Birdhouse Builders** **National Curriculum Content Area:** Design To 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. To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Pupils will know:** • What a flat pack diagram is and can use it to identify each part of a structure. • The tools associated with basic woodwork. • The safety rules you need to follow when doing woodwork.	**Programming and Electrical Systems - Programming Pioneers** **National Curriculum Content Area:** Design To 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. To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design **Pupils will know:** • How computers and computer programs are used in a variety of products. • How modern memory chips work to store information

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	Pupils will learn to: • To explore different types of burgers and their nutrition facts. • To explore how to make burger patties. • To explore sauces and side dishes for burgers. • To explore burger buns and their suitability. • To be able to plan and design a burger to make. • To be able to make a burger and evaluate the process. **Key Vocabulary** Recipe, nutrition, pattie, burger, ingredients, diet.	**Pupils will learn to:** • To investigate the purpose and appearance of bird houses. • To investigate the materials and features of bird houses and how to draw diagrams. • To investigate and practise woodwork skills. • To be able to design a bird house for a specific bird. • To be able to make a bird house by following a plan. • To evaluate, make predictions and promote a completed bird house. **Key Vocabulary** Flat pack, drill, sturdy, exploded diagram, measure, clamp, saw, sand, drill, cavity, function, construction, effectiveness, criteria, prototype.	• What a computer engineer is and what they do. **Pupils will learn to** • To explain how computers and computer programs are used in a variety of products. • To develop ideas for a product with an embedded computer system that controls it. • To develop, model and communicate ideas for an embedded system which monitors and controls a door, a room or both. • To develop ideas for a product and start to write programs to monitor and control them. • To model and communicate ideas, using either prototype models or computer-aided design. To evaluate the design for a computer-controlled system and consider the views of others to improve work. **Key Vocabulary** Computer controlled system, debug, algorithm, prototype, electronic component, embedded systems.