Loxwood Primary School
Design and Technology (DT)

Intent:

At Loxwood, Teachers ensure they have covered the skills required to meet the aims of the national curriculum, understanding that education goes beyond this. In Design Technology (DT) we explore the diverse needs of our community and the world, meeting the needs of all our children.

Our children will:

- Have a broad range of practical experiences to create innovative designs which solve real and relevant problems within a variety of different contexts.
- Learn to identify real and relevant problems, critically evaluate existing products and then take risks and innovate when designing and creating solutions to the problems.
- Reflect, evaluate and improve on prototypes using design criteria throughout to support this process.
- Evaluate key events and individuals who have helped shape the world, showing the real impact of design and technology on the wider environment and helping to inspire children to become the next generation of innovators.
- Participate in various DT challenges to encourage the children to see DT as a real creative process, from design brief to finished evaluated product.

In DT, we incorporate our core values (**Resilience, Collaboration, Curiosity, Creativity and Kindness**) to ensure that our children develop as **life-long learners and responsible citizens**. Through Quality First Teaching and having high expectations, we ensure all children (including disadvantaged and SEND) are accessing the curriculum by constantly reviewing and adapting teaching.

Implementation:

We have a coherent and sequenced curriculum building progression of knowledge and skills every year. EYFS have their own topic cycle but work alongside Key Stage 1. The rest of the school work in pairs – Year 1 and Year 2, Year 3 and Year 4 and then Year 5 and Year 6 and follow a two-year topic cycle. These year groups plan together weekly. Through progression the children develop their techniques, including their control and their use of materials, with creativity, experimentation and an increasing awareness of different kinds of design. Through revisiting and consolidating skills, children progress to build on prior knowledge, developing new skills, knowledge and challenge. We intend to inspire pupils and practitioners to develop a love of Design and Technology and see how it has helped shaped the ever-evolving technological world they live in.

Impact:

We assess children as part of our ongoing teaching and learning. Most assessments are based on ongoing summative judgements following lessons. All children use technical vocabulary accurately and pupils are expected to know, apply and understand the matters, skills and processes specified. Children improve their enquiry skills, knowledge and inquisitiveness about the world around them, and their impact through design on the world. Children will become more confident in analysing their work and giving their opinion on their own and other design works. Children show competences in improving their resilience and perseverance by continually evaluating and improving their work. All children in school can speak confidently about their design work and their skills.

Design and Technology Whole School Topic Overview

	Cycle A (2022-2023)						Cycle B (2023-2024)					
	Autumn		**Spring**		**Summer**		**Autumn**		**Spring**		**Summer**	
EYFS	**This is Me!**	**Night and Day**	**Traditional tales**	**People who help us**	**Growing**	**Moving on, journeys and adventures**	**This is Me!**	**Night and Day**	**Traditional tales**	**People who help us**	**Growing**	**Moving on, journeys and adventures**
Year 1 & 2	**On your marks, get set go!** Design and make a vehicle		**A Walk on the Wild Side!** Design and make a fruit salad.		**Make a Splash!** Design and make a puppet with moving parts		**Castles in the Sky** Design and make a chair for Baby Bear		**Fantastic Forests** Design, make and evaluate a sandwich		**Once There Were Giants!** Design, make and evaluate a bridge.	
Year 3 & 4	**Cooking & Nutrition- Sandwich Snacks** Design, make and evaluate different types of bread.		**Mechanical Posters** Design, make and evaluate an environmental poster with moving parts.		**Insects-sewing** Design, make and evaluate a sewn and collaged insect.		**Kites** Design, make and evaluate different types of kite.		**Earthquake proof structures** Design, make and evaluate an earthquake proof building Roman Shield		**Edible Garden** Design, make and evaluate the correct proportions of a balanced meal (they have grown).	
Year 5 & 6	**Battery Operated Lights** Research, design, make and evaluate a fully functioning battery operated light house.		**Global Food** Learn some advanced cooking techniques when making traditional dishes from different countries.		**Programming Adventures** Design, make and evaluate adventure maps.		**Marbulous Structures** Explore free standing structures and how they can be strengthen and reinforced. Design, make and evaluate a marble run.		**CAMS (Rainforest Creatures)** Design, make and evaluate a rainforest animal with a simple CAM mechanism.		**Fairground** Research, design, make and evaluate model fairground rides.	

Progression in Design and Technology

	EYFS	Year 1 &2	Year 3 &4	Year 5 & 6
Design	Expressive Arts and Design (EAD) The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe. Expressive Arts and Design: Creating with Materials • Uses various construction materials, e.g. joining pieces, stacking vertically and horizontally, balancing, making enclosures and creating spaces • Uses tools for a purpose Children will: • Begin to make things for a purpose • Begin to think about what they are going to make, what it will look like, the different parts and the materials that they will use to make it. Expressive Arts and Design Statutory ELG: Creating with Materials- Children at the expected level of development will: - 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. Being Imaginative and Expressive- Children at the expected level of development will:	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. • use their knowledge of existing products and their own experience to help generate their ideas; • design products that have a purpose and are aimed at an intended user; • explain how their products will look and work through talking and simple annotated drawings; • design models using simple computing software; • plan and test ideas using templates and mock-ups • understand and follow simple design criteria; • work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment. Design, label, purpose, design criteria, annotate, product, user.	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. They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design. • identify the design features of their products that will appeal to intended customers; • use their knowledge of a broad range of existing products to help generate their ideas; • design innovative and appealing products that have a clear purpose and are aimed at a specific user; • explain how particular parts of their products work; • use annotated sketches and cross-sectional drawings to develop and communicate their ideas; • when designing, explore different initial ideas before coming up with a final design; • when planning, start to explain their choice of materials and components including function and aesthetics; • test ideas out through using prototypes; • use computer-aided design to develop and communicate their ideas; • develop and follow simple design criteria; • work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment. Design brief, annotate, cross-section, diagram, innovative, components, prototypes, and aesthetics.	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 their knowledge of a broad range of existing products to help generate their ideas; • design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; • explain how particular parts of their products work; • use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; • generate a range of design ideas and clearly communicate final designs; • consider the availability and costings of resources when planning out designs; • work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment. product, user, design, conservation, culture, enterprise, industry, environment

	- Invent, adapt and recount narratives and stories with peers and their teacher; - Sing a range of well-known nursery rhymes and songs; - Perform songs, rhymes, poems and stories with others, and – when appropriate – try to move in time with music. Physical Development Statutory ELG: Fine Motor Skills Children at the expected level of development will: - Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases; - Use a range of small tools, including scissors, paint brushes and cutlery; - Begin to show accuracy and care when drawing. Communication and Language statutory ELG: Listening, Attention and Understanding Children at the expected level of development will: - Make comments about what they have heard and ask questions to clarify their understanding; - Hold conversation when engaged in back-and-forth exchanges with their teacher and peers.			
Make	Fine motor control and precision helps with hand-eye co-ordination, which is later linked to early literacy. Repeated and varied opportunities to explore and play with small world activities, puzzles, arts and crafts and the practice of using small tools, with feedback and support from adults, allow children to develop proficiency, control and confidence Expressive Arts and Design- Creating with materials: • Develops their own ideas through experimentation with diverse materials, e.g. light, projected image, loose parts, watercolours, powder paint, to express and communicate their discoveries and understanding. • Uses their increasing knowledge and understanding of tools and materials to explore their interests and enquiries and develop their thinking Children will	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. • with support, follow a simple plan or recipe; • begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer; • select from a range of materials, textiles and components according to their characteristics; • learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures; • use a range of materials and components, including textiles and food ingredients; • with help, measure and mark out; • cut, shape and score materials with some accuracy;	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. Plan • with growing confidence, carefully select from a range of tools and equipment, explaining their choices; • select from a range of materials and components according to their functional properties and aesthetic qualities; • place the main stages of making in a systematic order; Practical skills and techniques • learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures;	Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to functional properties and aesthetic qualities. • independently plan by suggesting what to do next; • with growing confidence, select from a wide range of tools and equipment, explaining their choices; • select from a range of materials and components according to their functional properties and aesthetic qualities; • create step-by-step plans as a guide to making; • learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures; • independently take exact measurements and mark out, to within 1 millimetre; • use a full range of materials and components, including construction materials and kits, textiles, and mechanical components;

	• Select from a range of materials to make practically. • Will use a selection of hand tools such as scissors, safe knives safely. • Will use a range of materials and components to make practically • Will begin to cut and shape materials • Will begin to join and combine materials. Physical Development Statutory ELG: <u>Health and self-care</u> - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. <u>Fine Motor Skills</u> Children at the expected level of development will: - Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases; - Use a range of small tools, including scissors, paint brushes and cutlery; - Begin to show accuracy and care when drawing. -draw, paper, paint, pens, pencil, chalk, cardboard and clay, paintbrush, scissors, -joining materials- stapler, masking tape, glue, string, thread, split pins, treasury tags, card strips	• assemble, join and combine materials, components or ingredients; • demonstrate how to cut, shape and join fabric to make a simple product; • manipulate fabrics in simple ways to create the desired effect; • use a basic running stich; • cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups; • begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations. Recipe, grater, zester, chopping board, hand tool, juicer, materials, hygiene, ingredients, textiles, running stitch, score, peel, grate.	• use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components; • with growing independence, measure and mark out to the nearest cm and millimetre; • cut, shape and score materials with some degree of accuracy; • assemble, join and combine material and components with some degree of accuracy; • demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product; • join textiles with an appropriate sewing technique; • begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics. Components, materials, aesthetic qualities, techniques, running stitch, back stitch, functional properties, score and accuracy	• cut a range of materials with precision and accuracy; • shape and score materials with precision and accuracy; • assemble, join and combine materials and components with accuracy; • demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product; • join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch; • refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape. materials, components, mechanical, assemble, accuracy, backstitch, whip stitch, blanket stitch
Evaluate	Through conversation, story-telling and role play, where children share their ideas with support and modelling from their teacher, and sensitive questioning that invites them to elaborate, children become comfortable using a rich range of vocabulary and language structures. Communication and Language (CL)- <u>Understanding</u> • Understands questions such as *who; why; when; where* and *how* Children will • Begin to think about materials and products and what they are made from	Explore and evaluate a range of existing products. They evaluate their ideas and products against design criteria. • explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; • explore what materials products are made from; • explain positives and things to improve for existing products. • talk about their design ideas and what they are making; • as they work, start to identify strengths and possible changes they might make to refine their existing design; • evaluate their products and ideas against their simple design criteria;	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. • explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose; • explore what materials/ingredients products are made from and suggest reasons for this; • consider their design criteria as they make progress and are willing to alter their	Investigate and analyse a range of existing products. • complete detailed competitor analysis of other products on the market; • critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make; 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 the original design criteria, making changes as needed. competitor, manufacture, purpose

	• They will talk about the materials and begin to think about their properties • They will begin to evaluarte their work, thinking about the materials they have chosen to use • They will ask questions about how and why things work the way they do Communication and language ELG: Listening, Attention and Understanding Children at the expected level of development will: - Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions; - Make comments about what they have heard and ask questions to clarify their understanding; - Hold conversation when engaged in back-and-forth exchanges with their teacher and peers Who; why; when; where and how	• start to understand that the iterative process sometimes involves repeating different stages of the process. Evaluate, compare, improve, design criteria,	plans, sometimes considering the views of others if this helps them to improve their product; • evaluate their product against their original design criteria; • evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world. Investigate, analyse, evaluate, purpose, criteria and product.	
Technical Knowledge	Fine motor control and precision helps with hand-eye co-ordination, which is later linked to early literacy. Repeated and varied opportunities to explore and play with small world activities, puzzles, arts and crafts and the practice of using small tools, with feedback and support from adults, allow children to develop proficiency, control and confidence Physical Development (PD) • Uses simple tools to effect changes to materials • Handles tools, objects, construction and malleable materials safely and with increasing control and intention Expressive Arts and Design Creating with materials: • Develops their own ideas through experimentation with diverse materials, e.g. light, projected image, loose parts, watercolours, powder paint, to express and communicate their discoveries and understanding. • Uses their increasing knowledge and understanding of tools and materials to	Children build structures, exploring how they can be made stronger, stiffer and more stable. They explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. • build simple structures, exploring how they can be made stronger, stiffer and more stable; • talk about and start to understand the simple working characteristics of materials and components; • explore and create products using mechanisms, such as levers, sliders and wheels. Structure, stronger, stable, stiffer, mechanism, lever, wheel, axel.	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. • understand that materials have both functional properties and aesthetic qualities; • apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • understand and demonstrate how mechanical and electrical systems have an input and output process; • make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; • explain how mechanical systems such as levers and linkages create	Understand and use electrical systems in their products (e.g. series circuits incorporating switches, bulbs, buzzers and motors). • understand and demonstrate that mechanical and electrical systems have an input, process and output; • explain how mechanical systems, such as cams, create movement and use mechanical systems in their products; Apply their understanding of computing to program, monitor and control their products. • apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; • apply their understanding of computing to program, monitor and control a product. mechanical, electrical, reinforce, monitor, control

	explore their interests and enquiries and develop their thinking • Use a variety of recycled materials to create sculptures. • Begin to use a variety of joining materials to support children to make 2d and 3d sculptures. Children will • Begin to think about how things work • Use different mechanisms such as wheels and levers Physical Development Statutory ELG: Health and self-care - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. Fine Motor Skills Children at the expected level of development will: - Hold a pencil effectively in preparation for fluent writing – using the tripod grip in almost all cases; - Use a range of small tools, including scissors, paint brushes and cutlery; - Begin to show accuracy and care when drawing. Sculpture, cut, stick, glue, selotape, string, masking tape, cardboard, foil,		movement; • use mechanical systems in their products. Functional, strengthen, stiffen, reinforce, mechanical, levers, linkage, series, parallel, input, output and process.	
Cooking and Nutrition	Physical activity is vital in children's all-round development, enabling them to pursue happy, healthy and active lives. Physical Development (PD) Health and Self-care: • Eats a healthy range of foodstuffs and understands need for variety in food • Describes a range of different food textures and tastes when cooking and notices changes when they are combined or exposed to hot and cold temperatures Children will:	Children use the basic principles of a healthy and varied diet to prepare dishes. • explain where in the world different foods originate from; • understand that all food comes from plants or animals; • understand that food has to be farmed, grown elsewhere (e.g. home) or caught; • name and sort foods into the five groups in the Eatwell Guide; • understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; • use what they know about the Eatwell Guide to design and prepare dishes.	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. •start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; •understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically;	Understand and apply the principles of a healthy and varied diet. • explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; • know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.

	• Begin to understand where some foods come from.- animals or plants • Be able to talk about which foods are healthy and which are not. • Begin to think about the five food groups and how to sort different foods • Understand that everyone should eat at least five portions of fruit and vegetables every day Physical Development Statutory ELG: Health and self-care - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. Food, fruit, vegetable, meat, plants, animals, texture, taste, smell, or colour	Plants, animals, farmed, portion, fruit, vegetables, prepare.	• with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; • use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; • explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; • understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; • prepare ingredients using appropriate cooking utensils; • measure and weigh ingredients to the nearest gram and millilitre; • start to independently follow a recipe; • start to understand seasonality. adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; savoury, hygienic, technique, mashing, whisking, crushing, grating, kneading, baking, healthy, nutritious, energy, utensils, gram, milliliter, recipe, substitute, appearance, texture and aroma.	• demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling; • alter methods, cooking times and/or temperatures; • measure accurately and calculate ratios of ingredients to scale up or down from a recipe; • Independently follow a recipe. Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed. • understand about seasonality, how this may affect the food availability and plan recipes according to seasonality;
Key	EYFS Framework Early Learning Goal Non Statutory Birth to 5 matters document Vocabulary	National Curriculum Objectives Children can: Vocabulary		