Design and Technology

Our golden threads are key concepts that underpin learning in each milestone. This enables pupils to reinforce and build upon prior learning, make connections and develop subject specific language.

Our golden threads for Design and Technology are:

Mechanisms
Textiles
Food
Structures
Community

Intent:

At Lovington Primary School, our Design Technology curriculum develops children's learning and results in the acquisition of knowledge and skills. Children will know more, remember more and understand more after experiencing practical tasks.

At Lovington, Design and Technology should be fully inclusive for every child. Our aims are to:

- Fulfil the requirements of the National Curriculum for Design and Technology.
- Provide a broad and balanced curriculum.
- Ensure the progressive development of knowledge and skills.
- Learn how to take risks
- Become resourceful, innovative, enterprising and capable citizens through evaluation of past and present design and technology.
- Develop a critical understanding of its impact on daily life and the wider world.
- Participate successfully in an increasingly technological world, using the language of Design and Technology.

Design and Technology in the Early Years Foundation Stage
During the EYFS, the essential building blocks of children's design and technology capabilities are established. There are many opportunities for children to explore, develop and apply design and technology-related skills across the seven areas of learning. Through continuous provision, children have the chance

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to explore existing products and construction kits and to develop practical skills with a range of resources, exploring different ways of shaping, assembling and joining materials. They participate in designing, the process of which can be performed via speaking and listening, gesture and/or modelling; it does not necessarily entail drawing. Where necessary, they are taught practical skills and techniques directly. Design and Technology skills are explicitly referenced in the following ELGs:

Area of Learning	**Early Learning Goal**	
Personal, Social and Emotional Development	Listening, Attention and Understanding	Hold conversation when engaged in back-and-forth exchanges with their teacher and peers
	Speaking	Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher
Personal, Social and Emotional Development	Self-Regulation	Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate
	Managing Self	Be confident to try new activities and show independence, resilience and perseverance in the face of challenge Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices
Physical Development	Fine Motor Skills	Use a range of small tools, including scissors, paintbrushes and cutlery.
Expressive Arts and Design	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.

The Characteristics of Effective Teaching and Learning support children in their creative thinking and problem-solving, in making choices about how to realise their designs, and in monitoring and reviewing how well their designs have worked and how they can adapt them as needed.

National Curriculum Expectations

Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
Design Pupils should be taught to: • design purposeful, functional, appealing products for themselves and other users based on design criteria • generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. **Make** Pupils should be taught to: • 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** Pupils should be taught to: • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria. **Technical Knowledge** Pupils should be taught to: • build structures, exploring how they can be made stronger, stiffer and more stable • explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. **Cooking and Nutrition** Pupils should be taught to: • use the basic principles of a healthy and varied diet to prepare dishes	**Design** Pupils should be taught 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 • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** Pupils should be taught to: • select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** Pupils should be taught to: • investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work • understand how key events and individuals in design and technology have helped shape the world. **Technical Knowledge** • apply their understanding of how to strengthen, stiffen and reinforce more complex structures • understand and use mechanical systems in their products [for example,

• understand where food comes from.	gears, pulleys, cams, levers and linkages] • understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] • apply their understanding of computing to program, monitor and control their products. **Cooking and Nutrition** Pupils should be taught to: • 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.

Implementation

Year 1 and Year 2	Year 3 and Year 4	Year 5 and Year 6
Design		
➢ Children design purposeful, functional, appealing products for themselves, and other users based on design criteria. ➢ They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. Children can: • 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.	➢ Children 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. Children can: • identify the design features of their products that will appeal to intended customers • 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 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	➢ Children 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. Children can: • use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market • 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.

Make		
➢ Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] ➢ Children select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics **Children can:** • 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 safely and appropriately • 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 • assemble, join and combine materials or components • 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 • begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.	➢ Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately. ➢ They 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. **Children can:** • 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 • learn to use a range of tools and equipment safely, appropriately and accurately • 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 • 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	➢ Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. ➢ They 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. **Children can:** • 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 • independently take exact measurements and mark out • use a full range of materials and components, including construction materials and kits, textiles, and mechanical components • 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.

Evaluate		
➢ Children explore and evaluate a range of existing products. ➢ They evaluate their ideas and products against design criteria. Children can: • explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations • explain positives and things to improve for existing products • explore what materials products are made from • 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 • start to understand that the iterative process sometimes involves repeating different stages of the process.	➢ Children investigate and analyse a range of existing products. ➢ They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. ➢ They understand how key events and individuals in design and technology have helped shape the world. Children can: • 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 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.	➢ Children investigate and analyse a range of existing products. ➢ They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. ➢ They understand how key events and individuals in design and technology have helped shape the world. Children can: • complete detailed 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 the original design criteria, making changes as needed

Technical Knowledge		
➢ 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. Children can: • 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.	➢ Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures. ➢ They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. ➢ They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. ➢ They apply their understanding of computing to program, monitor and control their products. Children can: • understand that materials have both functional properties and aesthetic qualities • apply their understanding of how to strengthen, stiffen and reinforce more complex structures 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 movement • use mechanical systems in their products	➢ Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures. ➢ They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. ➢ They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. ➢ They apply their understanding of computing to program, monitor and control their products. Children can: • apply their understanding of how to strengthen, stiffen and reinforce more complex structures to create more useful characteristics of products • 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 a product.

Cooking and Nutrition		
➢ Children use the basic principles of a healthy and varied diet to prepare dishes. ➢ They understand where food comes from. Children can: • 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 • eat at least five portions of fruit and vegetables every day and start to explain why • use what they know to design and prepare dishes.	➢ Children understand and apply the principles of a healthy and varied diet. ➢ They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. ➢ They understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed. Children can: • 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 • 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 and be able to apply these principles when planning and cooking dishes • 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.	➢ Children understand and apply the principles of a healthy and varied diet. ➢ They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. ➢ They understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed. ➢ Children can: • know, explain and give examples of food that is grown, reared and caught in the UK, Europe and the wider world • understand about seasonality, how this may affect the food availability and plan recipes according to seasonality • understand that food is processed into ingredients that can be eaten or used in cooking • demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • demonstrate how to use a range of cooking techniques, such as baking, grilling, frying and boiling • 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 • 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.