Design and Technology progression at Oakworth Primary School

Statement of Intent, Implementation & Impact

Intent

Design and Technology is a practical and creative subject that prepares children to deal with tomorrows rapidly changing world. It allows children to tap into their imaginations and gives them hands on time to explore and flourish creatively. At Oakworth we intend to teach the children progressive practical skills through our project approach to learning. This allows children to make links to other subjects and creates a range of contexts in which they can design, make and evaluate their work and that of others. Through the subject of DT children learn that it is ok to fail and re- work an idea, they learn to persevere when things get tough and work collaboratively with others in a range of situations. We recognise the value and importance that DT has for developing our children as 'Young Superheroes', specifically developing their powers of resilience, teamwork, discovery and challenge throughout a range of projects.

Implementation

The DT curriculum has been designed to fulfil the requirements of the National Curriculum. The technical knowledge and skills have been broken down into units of work which cover structures, mechanisms, textiles and food technology in KS1 and the additional units of mechanical systems and electrical systems in KS2. In each unit there are specific skills and knowledge that has to be taught at each stage. This ensures children's skills develop as they move through school and prepares them for the next stage. In addition, the three key areas of designing, making and evaluating have also been broken down into specific skills and teaching in each year group. This ensures that the children are developing as designers and makers within each stage of their school life. DT is implemented through a project -based approach with an engaging end product as a goal related to the main theme. As children move through our school, they learn progressive skills and a wide variety of knowledge in DT and the curriculum empowers children to become independent, aspirational and resilient learners, ready for the next stage of their education.

Impact

Education at Oakworth is very much about the whole 'Oakworth Child', and we endeavour to present them with as many experiences as possible to equip them for life beyond Oakworth. DT allows children to learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. It is also adapted to meet the need of the individual to ensure we are inclusive and provide the best opportunities for all children.

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EYFS:
During the Early Years Foundation Stage, the essential building blocks of children's design and technology capability are established. There are many opportunities for carrying out D&T related activities in areas of continuous provision and specific focus tasks. The characteristics of effective learning are constantly developing in the EYFS setting. Playing and exploring, active learning and thinking critically are essential foundation blocks for DT throughout the school.

Nursery				
	Food	**Textiles**	**Construction**	**Modelling**
Nursery 3-4yrs	*Begins to express likes and dislikes in relation to food *Begins to take part in mixing and combining ingredients with an adult led group. **C&L** • Use a wider range of vocabulary. **PD** • Use one-handed tools and equipment, for example, cutting with a knife, mixing with a spoon. • Make healthy choices about food, drink, activity and toothbrushing. **UW** • Talk about the differences between materials and changes they notice.	*Begin to describe the texture of things. *Threads beads / reels / objects onto laces **PD** • Use one-handed tools and equipment, for example, making snips in paper with scissors. **EAD** • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures. **UW** • Talk about the differences between materials and changes they notice.	*Starting to construct vertically and horizontally, make enclosures and create spaces *Joins construction pieces together. *Realises that tools can be used for a purpose. *Use a variety of construction materials to create a model of choice. *Begin to talk about how they have made something. **PD** • Use one-handed tools and equipment, for example, making snips in paper with scissors. **EAD** • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures.	*Selects own resources and begin to talk about what they have made. *Can snip using scissors. *Can use glue independently. * Explore malleable materials, manipulating in different ways. **PD** • Use one-handed tools and equipment, for example, making snips in paper with scissors. **EAD** • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects. **UW**

				• Talk about the differences between materials and changes they notice.

Reception				
Reception 4-5yrs	**Food**	**Textiles**	**Construction**	**Modelling**
	*With supervision use the bridge hold to cut soft foods. *Eats and talks about a range of food and understands the need for variety *Begin to explore measure when weighing ingredients. **C&L** • Articulate their ideas and thoughts in well-formed sentences. • Connect one idea or action to another using a range of connectives. **PD** • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. • Know and talk about the different factors that support their overall health and wellbeing – healthy eating.	*Experiments to create different textures *Begins to thread through punched holes in card/ plastic templates **PD** • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. **EAD** • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively sharing ideas, resources and skills.	*Constructs with a variety of resource/ media including construction equipment and with a chosen purpose. Be able to talk about what they have made and the process. *Manipulates materials to achieve a planned effect. *Selects tools and techniques needed to assemble shape and join materials they are using. **C&L** • Articulate their ideas and thoughts in well-formed sentences. • Connect one idea or action to another using a range of connectives. **PD** • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing,	*To use a single hole punch to make holes in paper and card. *Uses simple tools and techniques appropriately (uses glue and tape) *Selects appropriate resources and adapts work where necessary. *To use scissors to cut on a line / curve with increasing accuracy. **PD** • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. **EAD** • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them.

	• Further develop the skills they need to manage the school day successfully – mealtimes.		paintbrushes, scissors, knives, forks and spoons. **EAD** • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively sharing ideas, resources and skills.	• Create collaboratively sharing ideas, resources and skills.
	Key EYFS Vocabulary			
	Like, don't like, ingredient names, untensil names, mix, cook, nake, oven, apron, chop, cut	**Hard, soft, bumpy, rough , smooth, bead, button, sequin, fabric, felt, thread, scissors, sew**	**Build, balance, tool names, on, off, moving, join, construct, connect.**	**Build, make, glue, scissors, cut, stick, sellotape, ruler, straws, hole punch, cardboard, paper, string**
ELG	**C&L (S)-**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. **PSED (MS)-**Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **PD (FMS)**Use a range of small tools, including scissors, paintbrushes and cutlery. **UW (NW)**- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **EAD (CWM)-** 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.			

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Year 1				
Year 1	**Design (developing planning and communicating ideas):** -Think of own ideas for design, drawing on own experience. -Suggest ideas and explain what they are going to do. -Use pictures and words to plan. -Design a product for myself, following design criteria. -Work in a range of contexts (imaginary, school, story based, wider community). **Make:** -Explain what is being made and why. -Select appropriate tools and equipment for purpose. -Make their design using appropriate techniques. **Evaluate:** -Say what they like and don't like about items they have made and attempt to say why. -Talk about their designs as they develop and identify good and bad points. -Talk about changes that may have been made in the process.			
	Food Technology	**Textiles**	**Structures**	**Mechanisms**
	Preparing fruit & vegetables. *Develop a food vocabulary using smell texture and feel. *Group familiar food products e.g. fruit and vegetables. *To cut and chop a range of soft ingredients safely using a serrated knife(with supervision) and hygienically. *Assemble and cook ingredients with support – follow simple recipes with simple sentences or pictures. * Begin to use the Eatwell guide. *Know and use technical vocabulary relevant to the project - **fruit and vegetable names, names of equipment and utensils, soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard, flesh, skin,**		**Free standing structures** *Know how to make freestanding structures stronger, stiffer and more stable. *Use a range of materials to make models. *Roll and curl paper to create tubes *Join appropriately for different materials and situations e.g. tape, glue *Investigate how structures can be made stronger. *Know and use technical vocabulary relevant to the project – **cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic**	**Sliders & Levers** *Explore and use sliders and levers. *Understand that different mechanisms produce different types of movement. *Cut paper and card *Cut along lines straight and curved *Insert paper fasteners for card linkages and use a hole punch. *Know and use technical vocabulary relevant to the project – **slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards**

	seed, pip, core, slicing, peeling, cutting, squeezing			

Year 2				
Y e a r 2	**Design (developing planning and communicating ideas):** -Think of own ideas for design, drawing on own experience and those of other people. -Develop design ideas through discussion, observation, drawing and modelling. -Identify simple design criteria. -Make simple drawings and label parts. -Add notes to drawings to help explanations. -To make mock ups of simple designs. -Discuss their work as it progresses. **Make**: -Select from and use a range of tools and equipment. -Use vocabulary to name and describe tools and materials. -Measure and cut with some accuracy. -Use hand tools safely and appropriately. -Assemble, join and combine to make models. -Explain what is being made and why the audience like it. -Choose appropriate tools and equipment describing and explaining why they are being used. **Evaluate**: -Talk about their own and pre-existing products and how they work, evaluating what went well and what could be different. -Suggest what went well and could be done different with their own product. -Discuss how closely their finished design meets their design criteria.			
	Food Technology	**Textiles**	**Structures**	**Mechanisms**
	Preparing fruit & vegetables. *To peel, grate and chop a range of ingredients safely and hygienically *To understand the need for a variety of foods in a diet using the Eatwell guide.	**Templates & joining techniques** *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.		**Wheels & Axles** *Explore and use wheels, axles and axle holders. *Distinguish between fixed and freely moving axles. *Cut strip wood/dowel using a hacksaw and bench hook

	*Measure and weigh food items, non-statutory measures e.g. spoon and cups *Assemble and cook ingredients with support. *Select ingredients according to their characteristics *Understand where food comes from. *Know and use technical vocabulary relevant to the project - **fruit and vegetable names, names of equipment and utensils, ensory vocabulary, flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing**	*Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. *Cut out shapes which have been created by drawing around a template onto the fabric *Sew a running stitch and over stitch with increased independence and metal needles. *Know and use technical vocabulary relevant to the project - **names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish**		*Mark out materials to be cut using a template if needed. To the nearest cm *Know and use technical vocabulary relevant to the project - **vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism**

Year 3	
Year 3	**Design (developing planning and communicating ideas):** -Generate ideas for an item, considering purpose and the user. -Identify a purpose and establish a criteria for a successful product. -Explore, develop and communicate proposals by modelling. -Communicate the plan by making drawings with detailed labels/notes when designing or writing. -Plan the order of work before starting. **Make:** -Select tools and techniques for making their products. -Measure, mark out, cut and assemble components with more accuracy. -Work safely with a range of simple tools. -Use finishing techniques to strengthen and improve the appearance of their product. -Think about their ideas as they work and be willing to change things if this helps them improve their work. **Evaluate:** -Evaluate their product against original design criteria. -Disassemble and evaluate familiar products. -Identify strengths and weaknesses of design ideas. -Consider and explain how a finished product could be improved.

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-Investigate and analyse a range of existing products.
Understand how key event and individuals in DT have helped shape the world -
Jaime Oliver – 1975 –
Celebrity chef. School dinner revolution - In 2005, Jamie's School Dinners revealed the terrible standards of UK school food. His campaign eventually saw the government commit new funds to improve school food, and launch The School Food Trust.

Food Technology	Textiles	Structures	Mechanical systems
Healthy & varied diet *Making healthy eating choices and from an understanding of a balanced diet *Develop a sensory vocabulary, using smell, taste texture and feel. *Prepare ingredients hygienically, selecting appropriate utensils. * Begin to use the bridge hold and claw grip to cut foods using a serrated knife. *Measure ingredients with support – grams/cups/ follow a recipe/follow instructions. *Assemble and cook ingredients – know how to mix, mould and begin to cook foods. (using toasters with supervision) *Begin to know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. *Know and use technical vocabulary relevant to the project – **name of products, names of equipment, utensils, techniques and ingredients**		**Shell structures** *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 complex 3D shapes. *Choose materials based on their properties (laminated, corrugated or ribbed) *Cut internal shapes *See a glue gun used by an adult *Know and use technical vocabulary relevant to the project – **shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, scoring, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, corrugating, ribbing, laminating**	**Levers & Linkages** *Understand and use lever and linkage mechanisms. *Distinguish between fixed and loose pivots. *To use lolly sticks/card to make levers and linkages *Cut materials accurately and safely by selecting appropriate tools *To measure to the nearest cm *Know and use technical vocabulary relevant to the project- **mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating**

	texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested			

Year 4					
Y e a r 4	**Design (developing planning and communicating ideas):** -Generate more than one idea for how to create a product. -Generate ideas considering the purpose for which they are designing. -Gather information to help design a successful product. (i.e. by asking others views) -Produce a detailed plan with labelled diagrams, a written explanation and sequence of actions. -Propose realistic suggestions of how they can achieve their designs. -Design appealing innovative products that are fit for purpose and aimed particular individuals or groups. **Make:** -Use a range of tools and equipment with accuracy. -Measure, mark out, join and assemble materials and components with accuracy. -Select appropriate tools and techniques for making their product. **Evaluate:** -Discuss how well the finish product meets the design criteria and how well it meets the needs of the user. -Investigate and analyse a range of existing products. -Evaluate their work both during and at the end of the assignment. Understand how key event and individuals in DT have helped shape the world – **Lewis Urry -1927 -2004 - Canadian chemical engineer & inventor.** **Creator of the world's first long-lasting alkaline battery. Longer life – more cost effective.**				
	Food Technology	**Textiles**	**Structures**	**Mechanical systems**	**Electrical systems**
	Healthy & varied diet *Prepare ingredients hygienically using appropriate utensils *Continue to develop bridge hold, claw grip, spreading,	**2D shape to 3D product** * Know how to strengthen, stiffen and reinforce existing fabrics. *Understand how to securely join two pieces of fabric together with			**Simple circuits & switches** *Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. *Apply their understanding

	grating skills safely and hygienically. *Follow a recipe *Assemble or cook ingredients – mix, stir, combine wet and dry ingredients. *Measure and weigh ingredients – begin to use digital scales. * Begin to use a hob with supervision if required. *Make healthy eating choices from an understanding of a balanced diet. *understand that food is farmed, caught and changed to make it safe and palatable/ tasty to eat. *Know and use technical vocabulary relevant to the project - **name of products, equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested**	appropriate stitching (any stitch) *Choose materials based on their functional properties and aesthetic qualities *Create a simple pattern. *Understand the need for patterns and seam allowances. *Know and use technical vocabulary relevant to the project. *Use appropriate decoration techniques e.g. applique (glued or simple stiches) *Use a glue gun with adult supervision 1:1 *Know and use technical vocabulary relevant to the project - **fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance**			of computing to program and control their products. *Choose materials based on their functional properties and aesthetic qualities *Know and use technical vocabulary relevant to the project – **series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip control, program, system, input device, output device**

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Year 5	
Year 5	**Design (developing planning and communicating ideas):** -Generate ideas through brainstorming and identifying a purpose for their product. -Use models, kits and drawings to formulate design ideas. -Begin to make simple prototypes. -Develop a clear idea of what has to be done, planning how to use materials, equipment and processes and suggesting alternative methods if the first attempt fails. -Use results of investigations, information sources including ICT when developing design ideas. **Make:** -Select appropriate materials tools and techniques. -Measure, mark out, cut and shape a range of materials using appropriate tools, equipment and techniques. -Measure and mark out with accuracy. -Join and combine materials and components in temporary and permanent ways. -Use tools safely under close supervision. **Evaluate:** -Justify their decisions about materials and methods of construction. -Evaluate a product against a design criteria. -Evaluate it personally and seek evaluation from others. -Identify what does and what does not work in the product. -Make suggestions as to how theirs or others designs could be improved. -Investigate and analyse a range of existing products. Understand how key event and individuals in DT have helped shape the world. **Katherine Johnson - 1918 – 2020** **Space travel – mathematician that calculated the safe pathway of travel for first space launch.**

Food Technology	Textiles	Structures	Mechanical systems	Electrical systems
Celebrating culture & seasonality *Taste a range of ingredients and food items to develop a sensory vocabulary for use when designing *Measure and weigh accurately using scales – digital and anaglogue.		**Frame Structures** *Understand how to strengthen, stiffen and reinforce 3-D frameworks. *Choose appropriate material for the purpose *Cut measured accurate slots	**Pulleys or Gears** *Understand that mechanical and electrical systems have an input, process and an output. * Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.	

	*Cut and shape ingredients into evenly fine sized pieces using appropriate tools and equipment *Use hobs to heat food with appropriate supervision. *Cook a range of savoury dishes using a range of cooking techniques – mixing, rubbing in, using a rolling pin, cracking an egg. *Begin to understand about seasonality in relation to food products and the source of different food products. *Know and use technical vocabulary relevant to the project - **Ingredient and utensils names** **fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble**		*Know and use technical vocabulary relevant to the project - **frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent**	* Know and use technical vocabulary relevant to the project – **pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, output**	

Year 6

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Year 6

Design (developing planning and communicating ideas):
-Investigate products/images to collect ideas and create own design criteria.
-Plan the order of their work choosing appropriate materials tools and techniques.
-Plan the sequence of work using a story board.
-Record ideas using annotated diagrams/ detailed labelled drawings and cross-sectional diagrams.
-Use models, kits and drawings to help formulate ideas.
-Make prototypes.
-Use **diagrams and CAD** to represent designs.

Make:
-Select appropriate materials, tools components and techniques.
-Assemble components to make working models.
-Use tools safely and accurately with increasing independence.
-Make modifications as they go along.
-Achieve a quality product.

Evaluate:
-Evaluate their product, identifying strengths and areas for improvement and carrying out appropriate tests.
-Record their evaluations using drawings with labels.
-Evaluate against their original criteria and suggest ways that their product could be improved.
-Reflect on their work using design criteria and saying how well their product meets the needs of the user.
-Investigate and analyse a range of existing products.

Understand how key event and individuals in DT have helped shape the world

Elon Musk
1971 –
Elon Musk cofounded the electronic payment firm PayPal, and in 2002 he founded SpaceX, a company that makes rockets and spacecraft. He was a major early funder of Tesla, which makes electric cars and batteries, and became its chief executive officer in 2008. He purchased the social media service Twitter in 2022.

Food	Textiles	Structures	Mechanical systems	Electrical Systems
Celebrating culture & seasonality *Understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms)	**Combining different fabric shapes** *Make a 3-D textile product from a combination of accurately made pattern pieces, fabric shapes and different fabrics.			**More complex switches and circuits** *Understand and use electrical systems in their products. * Test the system to demonstrate its effectiveness for the intended user and purpose.

	*To understand seasonality and where, and how ingredients are grown, reared caught and processed *Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. *independently follow a recipe. *Demonstrate a range of baking and cooking techniques – mixing, kneading etc. *Decorate appropriately. *understand the main food groups and the different nutrients that are important for health. *Know and use technical vocabulary relevant to the project - **Ingredient and utensils names** **fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble**	*Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decorations) *Fabrics can be strengthened, stiffened and reinforced where appropriate. *Know and use technical vocabulary relevant to the project – **seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings,**			*Know and use technical vocabulary relevant to the project – **series circuit, parallel circuit, names of switches and components, input device, output device, system, flowchart,** **reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch**

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