

The Wolds Federation

DT Curriculum



"Design is not just what it looks like and feels like. Design is how it works." –

Steve Jobs

Curriculum intent for design and technology

Our DT curriculum helps children to develop both the knowledge and the skills to become agents of change now by understanding that everything around them has been designed or engineered in some way. As they learn and remember more about the different elements of the design technology curriculum they will learn that they can impact positively on the manmade world around them and be a force for positive change.

The curriculum gives children first hand understanding of the importance of design, develops practical skills and effectively joins the knowledge and skills and attributes learned within school to wider society and the world of work. It is cross curricular and so builds on skills and knowledge from other subject areas such as measuring in maths, electrical systems in science, control in computing and obviously art and design skills. DT fundamentally encourages creativity.

The first element of DT- learning about the designed and made world and how things work is fundamental if children are to act as agents of change. Children need to recognise a need and seek to make those improvements if they are to change things for the better. Learning to design and make functional products for particular purposes and users is the second key element. This develops the collaboration, innovation and promotes ideas of sustainability and enterprise in the children. Again, this will support the children to become agents of change in their local, national and global communities.

In the Wolds Federation we teach the national curriculum for design and technology through the four key strands.

1. Appraising and analysing
2. Designing
3. Making
4. Evaluating

We have identified 5 key concepts.

At KS1 these are textiles, cooking and nutrition, mechanisms and structures

At KS2 there is the addition of the 5th of these, electrical and digital is taught.

DT is taught as a blocked subject and the children will receive around 6 lessons on average per unit of work. At KS1 there are six units of work across a two year cycle. In KS2 there are 12 units, three units over a four year cycle.

Design and technology in the Early Years

Through planned activities in the EYFS, children get the opportunity to develop their knowledge and understanding of the world. The planning for this strand is not included in this document and the EYFS curriculum is set out in detail in other documents but we include the expectation for the end of EYFS so that the complete journey through the school is clear.

The substantive knowledge for each unit of work is set out in the topic grids below with the in a nutshell knowledge. The progression in disciplinary knowledge is set against the expectations against each key stage.

KS1 Topics

Cycle A

Vocabulary	Topic specific vocabulary	Needle, thread, stitch, pattern, fabric, ribbon, fringe, decorate, join, knot
Making a Christmas decoration Key Concept Textiles		
Substantive <u>In a nutshell knowledge</u>		Know that fabric items are made up of different pattern pieces Understand that a template is used a pattern Know that there are different sewing stitches Know that fabric can be glued or stapled. Know that there are a range of techniques to decorate a fabric item
Explicit opportunities to develop SMCS Cultural development – Links to other ways to celebrate in different religions. Looking at different patterns from different cultures.		

Vocabulary	Topic specific vocabulary	Wheel axle, chassis
Making a fire engine Key Concept Mechanisms/Structures		
Substantive <u>In a nutshell knowledge</u>		Know that wheels are fixed onto an axle Know that an axle must be free moving on the chassis for the wheels to turn Know that card/paper can be made more stable/stiff by layering it.

Explicit opportunities to develop SMCS Moral development – How the wheel changed the world, firefighter jobs; dedication, service etc.		

Vocabulary	Topic specific vocabulary	Savoury, sweet, meat, dairy, salad, filling, edible, vitamins, healthy, fruit, vegetable, fibre
Seaside snacks Key Concept Cooking and nutrition		
Substantive <u>In a nutshell knowledge</u>		Know a variety of fruits and vegetable are essential for a healthy diet Know that fruit and vegetables have vitamins and fibre essential for a healthy diet Know that a balanced diet has things from different groups of food.
Explicit opportunities to develop SMCS Moral development – the morals of keeping healthy and a balanced diet. Cultural development – Fruit in different cultures.		

Cycle B

Vocabulary	Topic specific vocabulary	Stable, unstable, strong, weak, stronger, weaker, wood, plastic, paper, pillar, fit for purpose, product, finished product, structure, sections, secure, transparent, flexible, adapt
Toys garages Key Concept Structures		
Substantive <u>In a nutshell knowledge</u>		Know that the shape of materials can be changed to improve the strength and stiffness of structures Know that cylinders are a strong kind of structure

		Know that 2D nets can be changed into 3D structures
Explicit opportunities to develop SMCS Cultural development – Find cultural examples of building with shapes. Moral development – Safety. Structures to withstand natural disasters.		

Vocabulary	Topic specific vocabulary	Mechanism, linkage, lever, slot, guide, bridge, pivot, system, horizontal, vertical
Moving pictures Key Concept Mechanisms		
Substantive <u>In a nutshell knowledge</u>		Know that levers and sliders are mechanisms Know that levels and sliders can make things move Know and use the vocabulary up, down, horizontal and vertical
Vocabulary	Topic specific vocabulary	Fruit, vegetable, specific names of fruits and vegetables, chop, peel, grate, core.
Eat more fruit and vegetables Key Concept Cooking and nutrition		
Substantive <u>In a nutshell knowledge</u>		Know a variety of fruits and vegetable are essential for a healthy diet Know that fruit and vegetables have vitamins and fibre essential for a healthy diet ~Know different fruit and vegetables need to be prepared in a particular way before they are eaten
Cultural development – Fruit in different cultures. Food preparation in different cultures. Moral development – Vegetarianism.		

KS2 Topics

Cycle A

Vocabulary	Topic specific vocabulary	Seasonality, seasonal, produce, varied diet, balanced meal, grown, caught, reared, processed
Seasonal Food and Local Produce Key Concept Cooking and Nutrition		
Substantive <u>In a nutshell knowledge</u>		Know how a variety of ingredients are grown, caught, reared and processed To know that some ingredients are seasonal and the advantages of eating seasonal produce. To understand the importance of a varied and balanced diet. To know why basic food hygiene is so important when preparing food Know how to use utensils and equipment to prepare and cook food.
Explicit opportunities to develop SMCS Moral development – Ethics of food production; animal welfare, use of chemicals and importing food (carbon footprints)		

Vocabulary	Topic specific vocabulary	Functional, aesthetics, hem, fastening, envelope, snap, button and button hole, applique, Running stitch, back stitch, zigzag stitch, over stitch, blanket stitch
Making a cushion cover Key Concept Textiles		
Substantive <u>In a nutshell knowledge</u>		Know how to join fabrics using a variety of techniques Understand that there are different fastenings Know how to use a variety of stitches to produce design effect Apply embellishment techniques to produce an aesthetically pleasing product.
Explicit opportunities to develop SMCS Cultural development – clothes designs.		

	Topic specific vocabulary	Strut, suspension, tension, compression, tie, diagonal, horizontal, vertical, beam, arch, truss, weight,
Building bridges Key Concept Structures		
Substantive <u>In a nutshell knowledge</u>		Explore how to create a strong beam Be aware of the terms compression and tension Identify stronger and weaker structures and give reasons Find different ways to reinforce structures Be able to identify in pictures examples of beam, arch, truss and suspension bridges. Consider effective and ineffective design of bridge
Explicit opportunities to develop SMCS Cultural development – examples and differences in construction and design. Moral development – safety responsibility.		

Cycle B

Vocabulary	Topic specific vocabulary	
Food for celebration Key Concept Cooking and nutrition		
Substantive <u>In a nutshell knowledge</u>		
Explicit opportunities to develop SMCS Cultural development – significance of choice of food in different religious celebrations/cultures.		

Vocabulary	Topic specific vocabulary	Frame, base, truss, roof, strengthen, stiff, strong, join, stability
Making a Greek inspired building Key Concept Structures		
Substantive <u>In a nutshell knowledge</u>		Know that architects sometimes take inspiration from the past when designing buildings today Know that wide and flat based objects are more stable Understand the difference between frame and shell structures Know that triangles can be used to reinforce frames Know that structures can be strengthened by manipulating materials and shapes Identify stronger and weaker structures and give reasons
Explicit opportunities to develop SMCS Spiritual development – spiritual inspiration and awe of buildings.		

Vocabulary	Topic specific vocabulary	Rotator, motor, belt and pulley, axle, stable framework, transfer, electrical motor, prototype
Fairground rides Key Concept mechanics/electrical and digital		
Substantive <u>In a nutshell knowledge</u>		Know that mechanisms control movement Know that input into the mechanism starts movement Know that the output is the result of putting the input into the mechanism
Explicit opportunities to develop SMCS Spiritual development – Mechanisms as making our life easier.		

Cycle C

Vocabulary	Topic specific vocabulary	Back stitch, split stitch, template, pattern, right side, facing, inside out, draw string, cord, ribbon,
Making a draw string bag Key Concept Textiles		
Substantive <u>In a nutshell knowledge</u>		Be able to identify the components of a draw string bag. Know how to follow a simple pattern Know how to create back stitch and split stitch to create effects Understand how to join two right sides together to then turn inside out.
Explicit opportunities to develop SMCS Moral development – Ethics around material choice, being environmentally friendly, recyclable.		

Spiritual development – What ‘precious’ item is kept in the bag, discuss reasons.

Vocabulary	Topic specific vocabulary	consumer, market research, taste, texture, peeler, sieve, grater, whisk, questionnaire, interview, allergy, tasting panels, advertising, healthy water, fizzy water, milk, design specification, labelled ingredients, cost yoghurt, fruit, fruit juice drawing, evaluation.
Making a new cold drink Key Concept Cooking and nutrition		
Substantive <u>In a nutshell knowledge</u>		Adapt a recipe to make it healthier Know where to find the nutritional information on packaging Conduct market research in order to design a suitable product Understand the impact of cost and the importance of budgeting when designing a food product
Explicit opportunities to develop SMCS Moral development – Cost of healthy, affordable food. Packaging; recyclable, waste.		

Vocabulary	Topic specific vocabulary	Cams, follower,
Making a moving toy Key Concept Mechanisms (structures as a subsidiary)		
Substantive <u>In a nutshell knowledge</u>		Know that cams are a mechanism that controls movement Explore cams and know that different shaped cams produce different follower movements Explore types of movements and the directions of a motion
Explicit opportunities to develop SMCS Cultural development – toys in different cultures. Spiritual development – the connection and enjoyment of a toy.		

Moral development – material sustainability.

Cycle D

Vocabulary	Topic specific vocabulary	Circuits, resistor, switch, complete, incomplete, led, bulb, switch, transparent, translucent
Illuminated light boxes Key Concepts Electrical and digital		
Substantive <u>In a nutshell knowledge</u>		Identify a range of electrical products which use illumination Learn the components of a functioning circuit, including that breaks in circuits will make it stop working Understand the differences between using a bulb and using an LED in a circuit Understand that a circuit requires a power source
Explicit opportunities to develop SMCS Moral development – Renewable and non-renewable.		

Vocabulary	Topic specific vocabulary	Pneumatic, air, compressed, input, output, hydraulic, pressure, inflate, deflate, syringe, closed system
Making a moving monster Pneumatics Key Concept Mechanics		
		Know that mechanisms are part of a system of parts that work together to cause motion

Substantive <u>In a nutshell knowledge</u>		Understand how pneumatics systems work Learn that pneumatic systems force air over a distance to create movement.
Explicit opportunities to develop SMCS Spiritual development – A system working together greater than the sum of their parts. Other systems (humans) working together. Collective responsibility.		

Vocabulary	Topic specific vocabulary	Flour, wheat, rubbing in, knead, bran, dough, endosperm, germ, leaven, unleavened
Making bread Key Concept Cooking and Nutrition		
Substantive <u>In a nutshell knowledge</u>		Record relevant ingredients for a recipe Understand the farm to fork journey for flour Adapt a bread recipe to make it more suitable for a particular customer Understand the combinations of food that will complement each other Work with cooking equipment safely and hygienically.
Explicit opportunities to develop SMCS Moral development – Fair trade – ingredients from? Fair prices? Spiritual development – Bread in religious celebrations.		

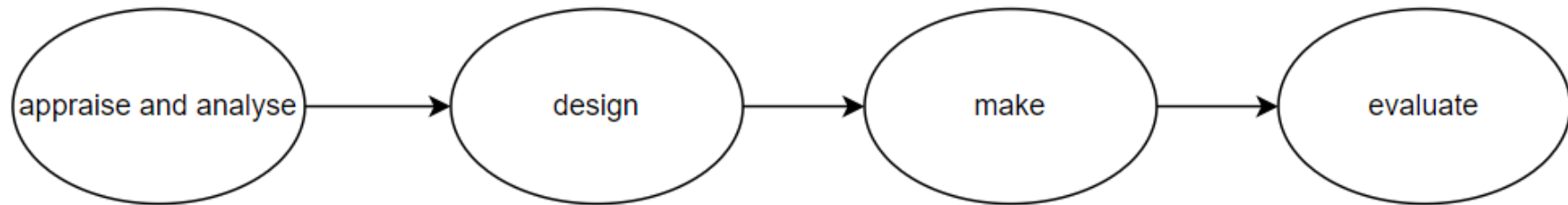
We have identified 5 key concepts that are developed across the whole of the design technology curriculum

These are textiles, cooking and nutrition, electrical and digital, structures and mechanics. The table shows how these key concepts are mapped against our topics from the long term plan.

	Textiles	Cooking and nutrition	Electrical and digital	Mechanics	Structures
KS1					
Cycle A	Making a decoration Autumn term	Seaside snack Summer term			Making a fire engine Spring
Cycle B		Produce from the garden Summer term		Structures Spring term	Making a moving picture Autumn
KS2					
Cycle A	Making a cushion cover Spring	Seasonal food and local produce Autumn			Building bridges Summer
Cycle B		Food for celebration Autumn	Fairground rides Summer term		Greek buildings Spring
Cycle C	Textiles Making a draw string bag Autumn	Making a drink Spring		Making toys with cams Summer	
Cycle D		Bread and farming Autumn Term	Illuminated light boxes Summer Term	Making a moving monster Spring Term	

Progression in Disciplinary Skills in Design Technology

Disciplinary Skills in Design Technology are intrinsically matched to the specific substantive knowledge. That is if you are evaluating a product, it could equally be a structural product, an electrical product or a product which is a food one. These skills are therefore directed related to the process of design technology. Those are



The table shows how the interconnected skills are developed across the whole school with clear expectations for the end of each key stage.

	End of foundation stage	End of KS1	End of Lower KS2	End of Upper KS2
Appraise and analyse	Explore how things work	- Draw on their own experience to help generate ideas - Suggest ideas and explain what they are going to do - Identify a target group for what they intend to design and make - Generate ideas by drawing on other people's experiences - Identify a purpose for what they intend to design and make	- Generate ideas for an item, considering its purpose and the user/s - Identify a purpose and establish criteria for a successful product. - Evaluate products and identify criteria that can be used for their own designs - Disassemble and evaluate familiar products	Generate ideas through brainstorming and identify a purpose for their product
Design	Explore different materials freely, in order to develop their ideas about how to use them and what to make.	- Model their ideas in card and paper - Develop their design ideas applying findings from their earlier research - Develop their design ideas through discussion, observation, drawing and modelling - Identify simple design criteria Make simple drawings and label parts	- Make drawings with labels when designing - Plan the order of their work before starting - Explore, develop and communicate design proposals by modelling ideas - Generate ideas, considering the purposes for which they are designing - Make labelled drawings from different views showing specific features - Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail	- Draw up a specification for their design - Use results of investigations, information sources, including ICT when developing design ideas - Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways, including detailed labelled drawings - Plan the order of their work, choosing appropriate materials, tools and techniques

Make	- Select and use activities and resources, with help when needed - Choose the right resources to carry out their own plan. - Use one-handed tools and equipment, for example, making snips in paper with scissors. - Use a range of small tools, including scissors and cutlery.	- Make their design using appropriate techniques - Measure, cut and score with some accuracy - Use tools <i>eg scissors and a hole punch</i> safely - Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape - Use simple finishing techniques to improve the appearance of their product	- Select appropriate tools and techniques for making their product - Measure, mark out, cut, score and assemble components with more accuracy - Join and combine materials and components accurately in temporary and permanent ways - Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT	- Measure and mark out accurately - Use skills in using different tools and equipment safely and accurately - Cut and join with accuracy to ensure a good-quality finish to the product
		- Select and use appropriate fruit and vegetables, processes and tools - Use basic food handling, hygienic practices and personal hygiene	- Demonstrate hygienic food preparation and storage - Use basic tools such as knives and peelers	- Weigh and measure accurately (time, dry ingredients, liquids) - Apply the rules for basic food hygiene and other safe practices <i>e.g. hazards relating to the use of ovens</i>
		- Cut, shape and join fabric to make a simple object - Use basic sewing techniques and stitches	- Measure, tape or pin, cut and join fabric with some accuracy - Sew using a range of different stitches	Pin, sew and stitch materials together create a product
Evaluate	Return to and build on their previous learning, refining ideas and developing their ability to represent them	- Evaluate their product by discussing how well it works in relation to the purpose - Evaluate their products as they are developed, identifying strengths and possible	- Evaluate their product against original design criteria <i>e.g. how well it meets its intended purpose</i> - Evaluate their work both during and at the end of the	- Evaluate a product against the original design specification - Evaluate it personally and seek evaluation from others - Evaluate their products,

		changes they might make • Evaluate against their design criteria • Evaluate their products as they are developed, identifying strengths and possible changes they might make • Talk about their ideas, saying what they like and dislike about them	assignment • Evaluate their products carrying out appropriate tests	identifying strengths and areas for development, 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
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