



The Weald Federation: Design Technology (DT)

With God's Love, we grow and learn together.

Intent

In The Weald Federation, we provide opportunities for our children to be creative and innovative problem solvers. Design and Technology (DT) is an inspiring and practical subject with natural links to maths, science, computing and some aspects of art. That said, starting points and ideas for projects can be found across the whole curriculum. Children are presented with practical (and imaginary) design briefs linked to topics and are taught how to think critically, find solutions and create products to fit a given set of design criteria. Children will research existing products and solutions and use these to develop their own ideas, and be taught the practical and theoretical skills needed to build, make and create. Self-evaluation and the evaluation of others is a key requirement of success. This subject provides the perfect opportunity to think outside the box and learn from our mistakes.

Implementation

The National Curriculum is the starting point for the teaching of all subjects in our school. Statutory requirements are carefully mapped across a two-year cycle, ensuring that skills and knowledge are taught in an order that maximises learning and allows sensible cross-curricular links to take place. Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to engage in the process of designing and making. The children design and create products that consider function and purpose and which are relevant to a range of sectors (for example, the home, school, leisure, culture, enterprise, industry and the wider environment). In considering the needs and values of others, we encourage our children to be respectful of others and to broaden their own ideas.

The teaching of DT is split into the following areas: construction; stiff and flexible materials; textiles; food and nutrition. In addition, Key Stage 2 pupils also cover mechanical, electrical and computing systems. Subject leaders and teachers have carefully considered the progression of skills for these areas and these can be found on pages 3-4 of this document. Our entire curriculum is based on topics which we feel work well to capture the interest of our children and allow us to make cross-curricular links which are meaningful and varied. DT is a focus subject for three or four terms each year, however, skills and key concepts are revisited in mini topics or as links to other subjects throughout the year. Details of this can be found on page 2 and page 5 of this document. DT is taught from Year 1 onwards, building on the work our EYFS pupils cover as part of their expressive arts and design early learning goals and the day-to-day activities they undertake which encourage them to find solutions to problems.

We encourage our children to reflect upon their work throughout all stages of the process, developing our pupils as critical thinkers and problem solvers. DT also provides scope to think creatively and imaginatively as well as teaching practical skills associated with cutting, shaping, joining and making. Evaluation of past and present design and technology provides starting points for their own work and enables children to develop a critical understanding of how design and technology has impacted on daily life and the wider world.

DT assessment is continuous against a set of assessment end points, helping class teachers to identify any gaps, provide support where needed and inform future planning. Further information is gathered through pupil voice, book looks and speaking with teachers to highlight areas of strength, best practice as well as identify areas for improvement. DT is a fully inclusive subject and one in which all children can participate fully. If a child has a particular SEND need that requires additional support to access DT, then this, of course, is provided. This subject is particularly good at helping children to develop their fine motor skills.

As with all subjects, we will regularly review and evaluate our DT curriculum to ensure that it meets the needs of all the children in our school.

Impact

The planning and teaching of our DT curriculum ensures that when children leave primary school, they will have acquired a broad range of subject knowledge, drawing on disciplines such as mathematics, science, engineering, computing and art. Pupils will have learnt how to take risks and learn from their mistakes, becoming resourceful, innovative, enterprising and capable citizens. When implemented correctly, quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.



The Weald Federation: DT Curriculum Map

A	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Yr 1 & 2	Our Planet	Into Winter	China	Toy Stories	Kenya	On Safari
	Stiff & Flexible Materials <i>Make a book with moving parts (sliders, pop ups etc)</i>	Textiles <i>Design and make a scarf to keep Stickman warm</i>	Food & Nutrition <i>Chinese stir fry</i> + Stiff & Flexible Materials <i>Chinese shadow puppets</i>	Construction <i>Designing and make a pull-along toy</i>	<i>Making smoothies from fruits that grow in Kenya</i>	Construction <i>Investigate, design & make a kite</i>
Yr 3 & 4	Stone Age to Iron Age	Frozen	Robots	Extreme Earth	Ancient Egypt	Ancient Greece
	<i>Design a product to assist Stone Age man (using materials and technology available at the time)</i>	Construction <i>Design & make a toboggan</i>	Mechanical Systems – levers & linkages <i>Design and make a robot with moving parts</i>	<i>Volcanoes</i>	<i>Pyramids & shadufs</i>	Mechanical Systems – pneumatic <i>Making Greek myth inspired monsters with moving parts</i>
Yr 5 & 6	Africa	Adventure	Courage	Travel Through Time	Coasts	Oceans
	Stiff & Flexible Materials <i>African instruments</i>	Computing Systems <i>Create a program to simulate a lighthouse (using Crumble)</i>	Construction <i>Air Raid Shelters</i>	Stiff & Flexible Materials <i>Make a split-pin viewfinder with moving parts</i>	STEM <i>Flood proof house</i>	STEM <i>Building bridges</i>

B	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Yr 1 & 2	Into the Woods	Lighting up the Sky	Man on the Moon	India	Sea Explorers	Pirates Ahoy!
	Food & Nutrition <i>Teddy bear's picnic</i> + Construction <i>Make a shelter in the woods</i>	Construction <i>Tudor house</i>	<i>Junk modelling – space rockets</i>	<i>Create a frame for a wall hanging (cc Art)</i>	Textiles <i>Design and make a cloth bag (reducing plastic use)</i>	Stiff & Flexible Materials <i>Make a pirate ship out of paper / card</i>
Yr 3 & 4	Invasion!	There be Dragons...	Fantastical Adventures	Chocolate!	Environmental Heroes	Rivers
	Stiff & Flexible Materials <i>Roman shield</i>	<i>Making paper / card Viking boats</i>	Electrical systems <i>Design & make a torch</i>	Food & Nutrition <i>Design, create & promote a healthy treat</i>	Textiles <i>Applique / wall hanging (cc: Art - Georgia O'Keefe)</i>	STEM <i>Boats – design / create to carry the heaviest weight</i>
Yr 5 & 6	Rainforests	Potions!	To Infinity & Beyond	Journeys	Victorians	Inventions
	Textiles <i>Make a stuffed rainforest animal</i>	Food & Nutrition <i>Design & make a feast fit for Hogwarts</i>	Mechanical Systems –cam systems <i>Design and make a rocket using cams</i>	<i>Use pop up / layer / slide techniques to make a card with moving parts</i>	<i>Victorian recipes e.g. gruel, brown bread ice cream, kedgeree, treacle tart etc</i>	STEM project Hot Air Balloon

Bold headings = DT is a focus this term. Where DT is not a focus, optional learning / activities are suggested, these are not designed to be full units. They could also be set as home learning tasks.

NB: See EYFS Curriculum map to see how learning in EYFS feeds into the whole school curriculum map for DT



The Weald Federation: DT Progression of Skills & Knowledge (assessment points in bold)

Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
DESIGN		
<ul style="list-style-type: none"> • Can design purposeful, functional, appealing products based on design criteria • Can generate, develop, model & communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, ICT • Use pictures to help develop ideas • Describe what it is they want to create 	<ul style="list-style-type: none"> • Can investigate similar products to the one being made to give stating points for design • Can develop more than one design or adapt and initial design • Can add notes to drawings to help explain their design • Think ahead about the order of their work and decide upon tools & materials • Record the plan by drawing labelled sketches or writing 	<ul style="list-style-type: none"> • Sketch & model alternative ideas, developing one idea in depth • Propose realistic suggestions as to how they can achieve their design ideas • Can generate plans that could be read / followed by somebody else • Research the design criteria to inform their decisions about ways to proceed • Record ideas using annotated diagrams
EVALUATE		
<ul style="list-style-type: none"> • Can explore and evaluate a range of existing products • Can talk about how closely their finished product meets their design criteria • Say what they like & do not like about items they have made • Talk about their designs & identify good & bad points 	<ul style="list-style-type: none"> • Can discuss how well the finished product meets the design criteria & how well it meets the needs of the user • Can consider and explain how the finished product could be improved • Identify the strengths and weaknesses of their design ideas • Decide which design idea to develop based on the strengths and weaknesses of each design 	<ul style="list-style-type: none"> • Can evaluate their ideas & products against their own design criteria, considering the views of others • Can identify what works and what doesn't work in the product & make suggestions as to how their design could be improved • Understand how key events and individuals in design and technology have helped to shape the world • Justify their decisions about materials and methods of construction
CONSTRUCTION		
<ul style="list-style-type: none"> • Can select from, & use, a wide range of construction materials according to their characteristics • Can join appropriately for different materials & situations e.g. glue, tape • Can make an environment (e.g. a house) and provide parameters for design (e.g. a Lego figure must get through the door) • Explore & use mechanisms (e.g. wheels & axels) in their products • Investigate joinings: temporary, fixed and moving • Use wide variety of 'junk' for basis of 3d modelling • Build structures, making them stronger, stiffer & more stable • Make their own decisions on how to join particular materials & what sort of method to use • Learn to cut materials independently 	<ul style="list-style-type: none"> • Can join and combine materials with temporary, fixed or moving joinings • Can create prototypes to investigate templates, joining and strengthening techniques • Make structures more stable by giving them a wide base • Join materials using appropriate methods • Use appropriate decoration medium and techniques • Examine the tactile properties of different sorts of materials – look at the differences between cardboard & plastics & how different materials can be joined 	<ul style="list-style-type: none"> • Can create shell or frame structures • Can build structures and apply their knowledge to strengthen, stiffen and reinforce more complex structures • Strengthen frames with diagonal struts • Make & use cardboard corners • Use hacksaws with increasing accuracy (including measurements beforehand) • Cut strip wood, dowel, square section wood accurately to 2-3mm • Use sandpaper to smooth edges • Give access to wider choices of glues (PVA, wood glue, glue gun) & choose correct glue for correct purpose
STIFF & FLEXIBLE MATERIALS		
<ul style="list-style-type: none"> • Can fold, tear and cut card, cutting along curved and straight lines • Can link paper and card together to create a moving part • Can strengthen sheet materials in different ways • Roll paper to create tubes • Use simple pop ups • Curl paper 	<ul style="list-style-type: none"> • Can use scrunching, twisting and moulding techniques • Can use different glues and joining techniques (including papier mache) • Can investigate using different sheet materials for different purposes • Cut accurately and safely to a marked line 	<ul style="list-style-type: none"> • Can strengthen sheet materials to create 3d structures • Can select type of material needed on the basis of the physical property • Choose an appropriate sheet material for the purpose • Use a craft knife safely, cutting mat and safety ruler (with 1-2-1 supervision)



The Weald Federation: Art & Design Progression of Skills & Knowledge *continued* (assessment points in bold)

Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
FOOD & NUTRITION		
<ul style="list-style-type: none"> • Can measure & weigh food items and liquids using non-statutory measures e.g. spoons, cups • Can cut, peel, grate, chop a range of ingredients • Understands the need for a variety of foods in a diet and uses the principles of a healthy & varied diet to prepare dishes • Understand where food comes from • Select from, & use, a wide range of ingredients according to their characteristics • Develop a food vocabulary using taste, smell, texture & feel • Group familiar food products e.g. fruit and vegetables • Measuring liquids in containers 	<ul style="list-style-type: none"> • Can measure and weigh ingredients appropriately and accurately • Can follow instructions and recipes • Can analyse the taste, texture, smell and appearance of a range of foods • Join and combine a range of ingredients • Understand and apply the principles of a healthy and varied diet • Develop sensory vocabulary/knowledge using, smell, taste, texture and feel • Make healthy eating choices from and understanding of a balanced diet • Weigh & measure accurately using scales 	<ul style="list-style-type: none"> • Can prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques • Can select & prepare foods for a particular purpose • Understands seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. • Prepare food products taking into account the properties & characteristics of ingredients • Taste a range of ingredients / food items to develop a sensory food vocabulary • Cut & shape ingredients using appropriate tools and equipment • Join & combine food ingredients appropriately
TEXTILES		
<ul style="list-style-type: none"> • Can cut & shape fabric using scissors • Can join fabrics by using running stitch, glue, staples, and tape • Can colour fabrics using a range of techniques e.g. fabric paints, printing, painting, fabric crayons • Cutting different sorts of fabrics • Cut, trim and glue material and apply decoration • Experiment with a variety of techniques, eg. Weaving, finger knitting, fabric crayons and Binca • Apply decoration using beads, buttons, feathers etc • Create & use dyes i.e. onion skins, tea, coffee • Cut out shapes which have been created by drawing round a template onto the fabric 	<ul style="list-style-type: none"> • Can join fabrics using running stitch and over sewing • Can attach decoration to fabric eg. buttons, beads, sequins, braids, ribbons • Learn how to thread a needle (with teacher / parent help) • Select from a range of textiles based on their functional & aesthetic properties • Select colours and threads depending on what they are needed for • Develop skills in cutting, joining and stitching • Explore fastenings e.g. sew on buttons • Use appropriate decoration techniques 	<ul style="list-style-type: none"> • Can create 3d products using pattern pieces and seam allowance • Can decorate textiles appropriately often before joining components • Use a range of tools & equipment to perform cutting & shaping tasks • Select from a range of textiles based on their functional & aesthetic properties • Pin and tack fabric pieces together before sewing • Join fabrics using running stitch, over sewing or back stitch • Explore fastenings e.g. make loops
MECHANICAL SYSTEMS		
	<ul style="list-style-type: none"> • Can create a simple pneumatic system to make things move • Can make levers and linkages to make things move • Use lolly sticks &/or card to make levers &/or linkages • Cut slots and internal shapes • Use linkages to make movement larger or more varied • Use a variety of appropriate joining techniques, deciding on which tape or glue would be best to use 	<ul style="list-style-type: none"> • Can use a cam to make an up & down mechanism • Can make accurate measurements before using tools • Use a saw safely and accurately – measuring before sawing • Use sandpaper to smooth edges • Start to use drill with vices • Join wood in 2d and 3d structures • Use glue gun with close supervision (1-2-1)
ELECTIRCAL / COMPUTING SYSTEMS		
	<ul style="list-style-type: none"> • Can begin to understand and use electrical systems in products • Can select appropriate materials and components for a given brief • Make and represent different types of circuits incorporating switches, bulbs, buzzers and motors • Incorporate a circuit with a bulb into a model • Make and include a switch in a circuit 	<ul style="list-style-type: none"> • Understands how computers can control external devices • Can control a model using an ICT control programme for a given brief • Investigate different components that can be controlled by computer programs and compare them • Select appropriate materials and components for a given brief • Program and control a range of devices – e.g. floor robots

Bold objectives = assessment points



The Weald Federation: DT – Suggested Outcomes

KEY STAGE 1 - SUGGESTED / POSSIBLE OUTCOMES							
CYCLE A				CYCLE B			
CONSTRUCTION: Design and make a pull-along toy + Investigate, design & make a kite or paper windmill	TEXTILES: Design and make a scarf to keep Stickman warm	STIFF & FLEXIBLE MATERIALS: Make a book with moving parts (sliders, pop ups etc) + Shadow puppets	FOOD & NUTRITION: Chinese stir fry + Making smoothies from fruits that grow in Kenya	CONSTRUCTION: Making Tudor houses + Build a shelter in the woods + Junk modelling – rockets	TEXTILES: Design and make a cloth bag (reducing plastic use)	STIFF & FLEXIBLE MATERIALS: Pirate ship made from paper/card + Easter card with pop up or moving parts	FOOD & NUTRITION: Teddy bear's picnic

LOWER KEY STAGE 2 - SUGGESTED / POSSIBLE OUTCOMES							
CYCLE A				CYCLE B			
CONSTRUCTION: Design & make a toboggan + pyramids & / or shadufs	STIFF & FLEXIBLE MATERIALS: Make a working model volcano	MECHANICAL SYSTEMS – levers & linkages & pneumatic systems : Design and make a robot with moving parts + Greek myth monster with moving parts	STEM: Design a product to assist Stone Age man (using materials and technology available at the time)	STIFF & FLEXIBLE MATERIALS: Roman shield + Paper/card Viking boats + STEM investigation - boats	ELECTRICAL SYSTEMS Design & make a torch	FOOD & NUTRITION Design, create & promote a healthy treat	TEXTILES Applique / wall hanging (cc: Art - Georgia O'Keefe)

UPPER KEY STAGE 2 - SUGGESTED / POSSIBLE OUTCOMES							
CYCLE A				CYCLE B			
CONSTRUCTION: Design & make an air raid shelter	STIFF & FLEXIBLE MATERIALS: Investigate, design and make an African instrument	COMPUTING SYSTEMS: Create a program to simulate a lighthouse (using Crumble)	STEM: Design and make a prototype for a flood proof house + Building bridges	STIFF & FLEXIBLE MATERIALS: Cutting, shaping & joining sheet materials to make a sculpture (cc Art)+	MECHANICAL SYSTEMS – cam mechanisms Design and make a rocket using cams	FOOD & NUTRITION Design & make a feast fit for Hogwarts + <i>Victorian recipes e.g. gruel, brown bread ice cream, kedgeree, treacle tart etc</i>	TEXTILES Make a stuffed rainforest animal

National Curriculum in England: DT

Purpose of Study

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

Aims

The national curriculum for history aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- Understand and apply the principles of nutrition and learn how to cook.

Attainment Targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. *Schools are not required by law to teach the example content in [square brackets].*

Cooking & Nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

National Curriculum in England: DT

Key Stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- 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

- 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

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- 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 & Nutrition

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

Key Stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- 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 & computer-aided design

Make

- 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

- 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, 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 & Nutrition

- 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.