

Ingoldmells Academy Long-Term Map: Design and Technology

Nursery				
Reception Knowledge	<p><u>Design and technology – Cooking and nutrition: Soup</u></p> <ul style="list-style-type: none"> - To explore fruits and vegetables and the differences between them - To explore a pumpkin and describe it using the five senses - To design a fruit and vegetable soup recipe - To learn how to use a knife safely - To safely use tools to prepare ingredients - To design food packaging 	<p><u>Design and technology Textiles: Bookmarks</u></p> <ul style="list-style-type: none"> - To develop threading and weaving skills - To practise and apply weaving skills to a specific material e.g. paper - To practise and apply threading skills with specific materials e.g. hessian and wool - To use threading or sewing to design a product (bookmark) - To create a textiles product (bookmark) following their design - To reflect with children on how they have achieved their aims 	<p><u>Design and technology Structures: Boats</u></p> <ul style="list-style-type: none"> - To understand what waterproof means and to test whether materials are waterproof - To test and make predictions for which materials float or sink - To compare the uses of boats - To investigate how the shape and structure of boats affects the way they move - To design a boat - To create a boat based upon their own design 	
Vocabulary	<p>fruit Vegetables Knife Chop Slice Saucepan Blender Chopping board Hob Boil Blend Mix Packaging Recyclable Metal Plastic Reusable</p>	<p>Thread Weave Pattern Sew Sewing needle Embroider Design Evaluate</p>	<p>Waterproof Absorb Prediction Variable Experiment Investigation Float Sink Junk</p>	
Year 1/2 Knowledge	<p><u>Design and technology Structures: Constructing windmills</u></p> <ul style="list-style-type: none"> - To include individual preferences and requirements in my design - To make a stable structure 	<p><u>Design and technology Mechanisms: Fairground wheel</u></p> <ul style="list-style-type: none"> - To explore wheel mechanisms and design a Ferris wheel - To select appropriate materials - To build and test a moving wheel 	<p><u>Design and technology Mechanisms: Making a moving monster</u></p> <ul style="list-style-type: none"> - To look at objects and understand how they move - To explore different design options - To make a moving monster 	

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	<ul style="list-style-type: none"> - To assemble the components of my structure - To evaluate my project and adapt my design 	<ul style="list-style-type: none"> - To make an evaluate a structure with a rotating wheel 	
Vocabulary	<ul style="list-style-type: none"> Design Evaluation Net Stable Strong Test Weak Windmill 	<ul style="list-style-type: none"> Axle Decorate Evaluation Ferris wheel Mechanism Stable Strong Test Waterproof Weak 	<ul style="list-style-type: none"> Input Lever Linear motion Linkage Mechanical Mechanism Motion Oscillating motion Output Pivot Reciprocating motion Rotary motion Survey
Year 3/4 Knowledge	<p><u>Design and technology</u> <u>Electrical systems: Torches</u></p> <ul style="list-style-type: none"> - To learn about electrical items and how they work - To analyse and evaluate electrical products - To design a product to fit a set of specific user needs - To make and evaluate a torch 	<p><u>Design and technology</u> <u>Mechanical systems: Mechanical cars</u></p> <ul style="list-style-type: none"> - To build a simple prototype car chassis - To build a prototype of a sustainable slingshot car chassis - To build a prototype of a durable slingshot car chassis - To design a mechanised toy - To make a mechanical toy car from a kit 	<p><u>Design and technology</u> <u>Structure: Pavilions</u></p> <ul style="list-style-type: none"> - To create a range of different shaped frame structures - To design a structure - To build a frame structure - To add cladding to a frame structure
Vocabulary	<ul style="list-style-type: none"> Battery Bulb Buzzer Cell Component Conductor Copper Design criteria Electrical item Electricity Electronic item Function 	<ul style="list-style-type: none"> Bearing Chassis Force Machine Mechanism Prototype Target audience 	<ul style="list-style-type: none"> Cladding Design criteria Evaluation Frame structure Function Inspiration Pavilion Reinforce Stable Structure Target audience Target customer

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	<p>Insulator Series circuit Switch Test Torch Wire</p>		<p>Texture Theme</p>
<p>Year 5 Knowledge</p>	<p><u>Design and technology - Electrical systems: Doodlers</u></p> <ul style="list-style-type: none"> - To understand how motors are used in electrical products - To investigate an existing product to determine the factors that affect the product's form and function - To put findings from research into practise to develop an improved product - To develop a DIY kit for another individual to assemble their product 	<p><u>Design and technology Mechanical systems: Gears and Pulleys</u></p> <ul style="list-style-type: none"> - To create a working gear system and explain its function - To improve a working gear system and suggest some applications - To create a working pulley system and explain its function - To conduct market research to discover useful tasks an eco-gadget bike could perform - To design and evaluate an eco-gadget bike using design criteria 	<p><u>Design and technology Food: Developing a recipe</u></p> <ul style="list-style-type: none"> - To understand where food comes from - To understand the term 'healthy' - To adapt a traditional recipe - To complete a food product
<p>Vocabulary</p>	<p>Circuit component Configuration Current Develop DIY Investigate Motor Motorised Problem solve Product analysis Series circuit Stable Target user</p>	<p>Annotate Axle Force Gear/gear system Input/output Machine Market research Mechanism Pulley/pulley system Renewable energy Research Sustainability Teeth</p>	<p>Beef Cross-contamination Diet Ethical issues Farm Healthy Ingredients Method Nutrients Packaging Reared Recipe Research Substitute Supermarket Vegan Vegetarian Welfare</p>

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<p>Year 6 Knowledge</p>	<p><u>Design and technology - Textiles: Make Do and Mend</u></p> <p>Revisit how to use different types of equipment - when and how to use</p> <ul style="list-style-type: none"> - To design a product - To mark and cut fabric according to a design - To assemble a product - To decorate a product 	<p><u>Design and technology - Structure: Playgrounds</u></p> <p>Revisit annotated sketches, cross-sectional and exploded diagrams</p> <ul style="list-style-type: none"> - To design a playground with a variety of structures - To build a range of structures - To improve and add detail to structures - To create the surrounding landscape 	<p><u>Design and technology - Digital world: Navigating the world</u></p> <p>Revisit joining techniques</p> <ul style="list-style-type: none"> - To write a design brief and criteria based on a client request - To write a program to include multiple functions as part of a navigation device - To develop a sustainable product concept - To develop 3D CAD skills to produce a virtual model - To present a pitch to 'sell' the product to a specified client.
<p>Vocabulary</p>	<p>Accurate Adapt Annotate Design criteria Fabric Fastening Knot Properties Running-stitch Seam Sew Shape Target audience Target customer Thread Unique Waistcoat Waterproof</p>	<p>Sketch Structure Tenon saw Texture User Vice Adapt Apparatus Bench hook Cladding Coping saw Dowel Jelutong Modify Natural materials Plan view Playground Prototype Reinforce</p>	<p>Application (apps) Biodegradable Boolean Cardinal compass Client Compass Concept Convince Corrode Duplicate Environmentally friendly Finite GPS tracker If statement Infinite Investment Lightweight Loop Manufacture Mouldable Navigation Non-recyclable Product lifecycle Product lifespan Recyclable Smart</p>

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			Sustainable design Unsustainable design Variable Work plane
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D& T Coverage - 2023-2024

	Structures	Mechanisms/ mechanical systems	Textiles	Electrical Systems KS2 only	Digital World KS2 only	Food
Rec	X		X			X
Year 1/2	X	X X				
Year 3/4	X	X		X		
Year 5		X		X		X
Year 6	X		X		X	

D & T Coverage - 2024-2025

	Structures	Mechanisms/ mechanical systems	Textiles	Electrical Systems KS2 only	Digital World KS2 only	Food
Rec	X		X			X
Year 1/2	X		X			X
Year 3/4			X		X	X
Year 5		X		X		X
Year 6	X		X		X	

Design and Technology – National Curriculum Coverage

Development Matters 2021 Statements	EYFS
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	Food: Soup	Textiles: Bookmarks	Structures: Boats
Early Years Outcomes: Prime Areas			
<u>Physical development</u>			
<ul style="list-style-type: none"> Develop small motor skills so that they can use a range of tools competently, safely and confidently. 	√	√	√
ELG: Fine Motor Skills> Use a range of small tools, including scissors, paint brushes and cutlery.	√	√	√
<u>Communication and language</u>			
<ul style="list-style-type: none"> Learn new vocabulary 	√		
<ul style="list-style-type: none"> Use new vocabulary throughout the day 	√		
ELG: Speaking> Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.	√		√
<ul style="list-style-type: none"> Articulate their ideas and thoughts in well-formed sentences 			√
<ul style="list-style-type: none"> Connect one idea or action to another using a range of connectives 			√
<ul style="list-style-type: none"> Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen 			√
ELG: Speaking> Offer explanations for why things might happen.			√
<u>Personal, social and emotional development</u>			
<ul style="list-style-type: none"> Know and talk about the different factors that support their overall health and wellbeing: healthy eating. 	√		
ELG: Managing self> Manage their own basic hygiene and personal needs, including... understanding the importance of healthy food choices.	√		
Early Years Outcomes: Specific Areas			
<u>Understanding the world</u>			
<ul style="list-style-type: none"> Explore the natural world around them. 	√		√
ELG: The Natural World>Explore the natural world around them, making observations and drawing pictures of animals and plants.	√		√
<u>Expressive Arts and Design</u>			
<ul style="list-style-type: none"> Explore, use and refine a variety of artistic effects to express ideas and feelings. 	√	√	√
<ul style="list-style-type: none"> Return to and build on their previous learning, refining ideas and developing their ability to represent them. 		√	

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ELG: Creating with materials> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	✓	✓	✓
ELG: Creating with materials> Share their creations, explaining the process they have used.		✓	✓
Characteristics of Effective Learning			
• Playing and exploring	✓	✓	✓
• Active learning	✓	✓	✓
• Creating and thinking critically		✓	✓

National Curriculum Objectives – KS1	Primary DT Strands	Year 1/2 - 2023 – 2024			Year 1/2 - 2024 – 2025		
		Structures – Constructing windmills	Mechanisms – Fairground Wheel	Mechanisms – Making a moving monster	Structures – Baby bear’s chair	Textiles - Puppets	Cooking and nutrition – Fruit and vegetable smoothies
• Design purposeful, functional, appealing products for themselves and other users based on design criteria.	Design	✓	✓	✓	✓	✓	
• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology.	Design	✓	✓	✓	✓	✓	✓
• Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].	Make	✓	✓	✓	✓	✓	✓
• Select from and use a wide range of materials and	Make	✓	✓	✓	✓	✓	✓

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components, including construction materials, textiles and ingredients, according to their characteristics.							
• Explore and evaluate a range of existing products.	Evaluate	✓	✓	✓			
• Evaluate their ideas and products against design criteria.	Evaluate	✓	✓	✓	✓	✓	✓
• Build structures, exploring how they can be made stronger, stiffer and more stable.	Technical Knowledge	✓	✓		✓		
• Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	Technical Knowledge	✓	✓	✓			
• Use basic principles of a healthy and varied diet to prepare dishes.	Design, make, evaluate						
• Understand where food comes from.	Design, make, evaluate						✓

National Curriculum Objectives – KS2	Primary DT Strands	Year 3/4 - 2023 – 2024			Year 3/4 - 2024 – 2025		
		Electrical systems: torches	Mechanical systems: Making a slingshot car	Structure: Pavilions	Digital world: Electronic charm	Textiles: Fastenings	Cooking and nutrition: eating seasonally
• 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.	Design	✓	✓	✓	✓	✓	
• Generate, develop, model and communicate their ideas through discussion,	Design	✓	✓	✓	✓	✓	

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annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design.							
<ul style="list-style-type: none"> Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. 	Make	√	√	√		√	
<ul style="list-style-type: none"> Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. 	Make	√	√	√		√	
<ul style="list-style-type: none"> Investigate and analyse a range of existing products 	Evaluate	√	√	√	√	√	
<ul style="list-style-type: none"> Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. 	Evaluate	√	√	√	√	√	
<ul style="list-style-type: none"> Understand how key events and individuals in design and technology have helped shape the world. 	Evaluate	√	√		√		
<ul style="list-style-type: none"> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. 	Technical Knowledge			√			
<ul style="list-style-type: none"> Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. 	Technical Knowledge	√	√				
<ul style="list-style-type: none"> Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. 	Technical Knowledge						
<ul style="list-style-type: none"> Apply their understanding of computing to program, 	Technical Knowledge				√		

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monitor and control their products.							
<ul style="list-style-type: none"> Understand and apply principles of a healthy and varied diet. 	Design, make, evaluate						√
<ul style="list-style-type: none"> Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques. 	Design, make, evaluate						√
<ul style="list-style-type: none"> Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 	Design, make, evaluate						√

National Curriculum Objectives – KS2	Primary DT Strands	Year 5			Year 6		
		Electrical systems: Doodlers	Mechanical systems: Making a pop-up book	Food: What could be healthier	Structure: Playgrounds	Textiles: make do and mend	Digital world: navigating the world
<ul style="list-style-type: none"> 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. 	Design	√	√	√	√	√	√
<ul style="list-style-type: none"> Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. 	Design		√	√	√	√	√
<ul style="list-style-type: none"> Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, 	Make	√	√	√	√	√	√

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joining and finishing], accurately.							
<ul style="list-style-type: none"> Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. 	Make		√		√	√	
<ul style="list-style-type: none"> Investigate and analyse a range of existing products 	Evaluate	√	√	√	√	√	
<ul style="list-style-type: none"> Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. 	Evaluate	√	√	√	√	√	√
<ul style="list-style-type: none"> Understand how key events and individuals in design and technology have helped shape the world. 	Evaluate			√			
<ul style="list-style-type: none"> Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. 	Technical Knowledge	√					
<ul style="list-style-type: none"> Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]. 	Technical Knowledge		√		√		
<ul style="list-style-type: none"> Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. 	Technical Knowledge	√					
<ul style="list-style-type: none"> Apply their understanding of computing to program, monitor and control their products. 	Technical Knowledge						√
<ul style="list-style-type: none"> Understand and apply principles of a healthy and varied diet. 	Design, make, evaluate			√			
<ul style="list-style-type: none"> Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques. 	Design, make, evaluate			√			

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<ul style="list-style-type: none">Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	Design, make, evaluate			√			
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