



# **SANDY LANE PRIMARY SCHOOL DESIGN**

## **TECHNOLOGY CURRICULUM**



Design



Make



Technical  
knowledge



Evaluate

# DESIGN TECHNOLOGY CURRICULUM AT SANDY LANE PRIMARY SCHOOL

## Intent

Design and Technology is the marrying of both problem-solving thought process and practical skills. At Sandy Lane Primary School, children are given opportunities to develop both of these abilities in a variety of contexts. Children learn to think about and to solve problems, both as individuals and as part of a team and while doing so they develop practical, technical and creative skills.

Our pupils will be designers. They will explore their ideas within a variety of contexts, considering their own and others' needs, wants and values and the practical applications of their designs in a learning environment where it is safe to experiment, safe to fail, re-design and improve. To do this, children will select appropriate tools, technologies and materials, test and evaluate their own and others' work, reflect on how outcomes could be improved, learn about the importance of nutrition, food hygiene and safety and understand how design and technology has shaped the world we live in.

Children receive high quality academic learning experiences which is enriched with our 'Pupil Offer' which provides many rich and relevant experiences beyond the classroom.

## Implementation

The Design and Technology curriculum is delivered through a series of different areas:

### Structures:

Key Stage 1 - Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error.

Key Stage 2 - Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures.

### Mechanisms:

Key Stage 1 - Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products.

Key Stage 2 - Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automates, that use a combination of cams, followers, axles/shaft, cranks and topers.

### Textiles:

Key Stage 1 - Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique.

Key Stage 2 - Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their: ● Strength. ● Appropriate use. ● Design

### Electrical Systems:

Key Stage 2 only - Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can: ● Protect the circuitry. ● Reflect light. ● Conduct electricity. ● Insulate.

### Digital World:

Key Stage 2 only - Learn how to develop an electronic product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how the history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today.

### Cooking and Nutrition:

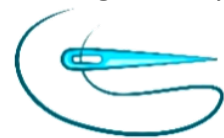
Key Stage 1 - Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals

Key Stage 2 - Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced.

The whole school design technology overview is followed, meaning it is taught in a systematic way. Each Magic Monday will focus on one or more of our four concepts:



Design



Make



Technical knowledge



Evaluate

Magic Monday lessons will combine increasing knowledge of the concept being taught through building upon previous learning, developing resilience of motor skills, alongside enriching the half termly topic.

## Impact

At the end of each phase pupils will have had the opportunity to develop all of our design technology concepts, embedding and developing the skills within these concepts throughout the years. Children look forward to 'Magic Mondays'; it is seen as a high profile and important part of our school week. They are proud of their design work and their sketch books and are able to talk about the progress they have made using their sketch books to help them. They place value on the whole process of developing skills and knowledge in Magic Mondays and not just the finished high quality final product. Children are reflective designers and are open and accepting of ways they can improve their work through evaluating both their own designs/products of others. We want our children to become resilient with their technology work but also take risks and experiment with different techniques that could be used. Children will develop their own preferences of different ways products can be produced and be able to give reasons for using different techniques for different reasons using their developing technical vocabulary.

Children will have developed knowledge of a broad range of crafts people and designers and be able to discuss work produced by them.

High quality comes are displayed proudly around school.

Teachers assess children's learning in every lesson and give feedback, support and challenge where appropriate. Design Technology is discussed in Phase and Leadership Curriculum Impact Meetings and parents are kept informed of their child's progress at parents' evenings, through school reports and work is celebrated through School Ping.

Design and Technology Vocabulary												
KS1			LKS2				UKS2					
Blender	Test	Evaluation	Climate	Unit of measurement	customer	Product design	Beef	Jelutong	Synthetic	materials	skills	Set square
Carton	Client	Expensive	Dry climate	Utilities 2D shapes	Texture	Program	Cross-contamination	Landscape	Thermometer	Plan view	Fit for purpose	Suspension bridge
Fruit	Design	Healthy	Exported	3D shapes	Theme	Sense	Diet	Mark out	thermoscope	Playground	Form	Tenon saw
Healthy	Evaluation		Imported	Castle	Accurate	Simulator	Ethical issues	Measure	Value	Prototype	Function	Test
Ingredients	Net		Mediterranean climate	Design criteria	Applique	Smart wearables	Farm	Modify	Variable	Reinforce	Gross motor skills	Truss bridge
Peel	Stable		Nationality	Evaluate	Cross-stitch	Stand	Healthy	Natural materials	Versatile	Sketch	Insulator	Wood Adapt
Peeler	Strong		Nutrients	Facade	Cushion	Technology	Ingredients	Plan view	Water-resistant	Strong	LED	Apparatus
Recipe	Test		Polar climate	Feature	Decorate	Template	Method	Playground	Workplane	Structure	User	Bench hook
Slice	Weak		Recipe	Flag	Detail	Test	Nutrients	Prototype	3D CAD	Tenon saw	Abutment	Cladding
Smoothie	Windmill		Seasonal food	Net	Fabric	User	Packaging	Reinforce	Application (apps)	Texture	Accurate	Coping saw
Stencil	Decorate		Seasons	Recyclable	Patch	2D	Reared	Sketch	Biodegradable	User	Arched bridge	Design
Template	Design		Temperate climate	Scoring	Running-stitch	Advantage	Recipe	Strong	Boolean	Vice	Beam bridge	Dowel
Vegetable	Fabric		Tropical climate	Stable	Seam	Assemble	Research	Structure	Cardinal compass	Weak	Coping saw	Evaluation
Alternative	Glue		Adapt	Strong	Stencil	Block	Substitute	Tenon saw	Client	Alert	Evaluation	Feedback
Diet	Model		Budget	Structure	Stuffing	Brand identity	Supermarket	Texture	Compass	Ambient	File	Idea
Balanced diet	Hand puppet		Cooling rack	Tab	Target audience	Branding	Vegan	User	Concept	Boolean	Mark out	Jelutong
Ingredients	Safety pin		Creaming	Weak	Target customer	Bug	Vegetarian	Vice	Convince	Consumables	Material	Landscape
Nutrients	Staple		Equipment	Aesthetic	Template	CAD	Welfare	Weak	Corrode	Decompose	properties	Mark out
Packaging	Stencil		Evaluation	Cladding	Assemble	Cheap	Accompaniment	Investment	Duplicate	Development	Measure	Measure
Refrigerator	Template		Flavour	Design criteria	Book sleeve	Coding	Collaboration	Lightweight	Environmentally friendly	Device	Predict	Modify
Sugar	Axle		Ingredients	Evaluation	Design criteria	Criteria	Cookbook	Loop	Equipment	Duplicate	Reinforce	Natural
Substitute	Axle holder		Method	Frame structure	Evaluation	Debug	Cross-contamination	Manufacture	Feature	Durable	Research	Template
Assemble	Chassis		Net	Function	Fabric	Design	Equipment	Materials (wood, metal, plastic etc.)	Finite	Electronic	Sandpaper	Thread
Design	Design		Packaging	Inspiration	Fastening	Develop	Farm	Mouldable	Function	Inventor	Switch	Unique
Evaluation	Evaluation		Prototype	Pavilion	Mock-up	Disadvantage	Flavour	Navigation	Functional	Lightweight	Target audience	Waistcoat
Mechanism	Fix		Quantity	Reinforce	Net	Ergonomic	Illustration	Non-recyclable	GPS tracker	Man-made	Test	Waterproof
Model	Mechanic		Recipe	Stable	Running-stitch	Evaluate	Imperative-verb	Product lifecycle	If statement	Manipulate	Wire	Battery
Sliders	Mechanism		Rubbing	Structure	Stencil	Form	Ingredients	Product lifespan	Infinite	Manoeuvre	Assemble	Buzzer
Stencil	Model		Sieving	Target audience	Target audience	Function	Method	Program	Structures:	Microplastics	Battery	Circuit
Target	Test		Target audience	Target	Target customer	Instructions	Nationality	Recyclable	Playgrounds	Model	Battery pack	Coin cell battery
audience	Wheel		Design	Electronic	Template Attract	Join	Preparation	Smart	Adapt	Monitor	Benefit	Component
Template			Design criteria	Electronic products	Component	Logo	Processed	Sustainable	Apparatus	Monitoring	Bulb	Conductor
			Graphics	Fasten	Constructive-criticism	Loop	Reared	Sustainable design	Bench hook	device	Bulb holder	Copper
			Kinetic energy	Feature	Design criteria	Mindfulness	Recipe	Unsustainable	Cladding	Moulded Plastic	Buzzer	Design
			Mechanism	Initiate	Electrostatic	Model	Research	design	Coping saw	Plastic pollution	Circuit	Design criteria
			Net	Key features	Evaluation	Net	Storyboard	Variable	Design	Programming	Circuit symbol	Function
			Structure	Layers	Feedback	Pause	Target audience	Template	Dowel	comment	component	Innovative
			Analogue	Loops	Motion	Process	Top tips	Accurate	Evaluation	Programming	Conductor	Insulator
			Badge	Micro: bit	Repel	Program	Unit of measurement	Adapt	Feedback	loop	Copper	LED
			CAD	Electrical systems:	Target audience	Prototype	Aesthetic	Annotate	Idea	Reformed	Design	Modify
			Control	Static electricity	Test Battery	Research	Computer-aided design	Design	Set square	Replica	Design criteria	Series circuit
			Design requirements	Attract	Bulb	Sketchpad	(CAD)	Design criteria	Tenon saw	Research	Evaluation	Prototype
			Develop	Component	Buzzer	Template	Caption	Detail	Accurate	Sensor	Fine motor	Slider
			Digital	Constructive-criticism	Cell	Test	Design	Fastening	Annotate	Strong	Right-angle	Structure
			Digital revolution	Design criteria	Component	Timer	Design brief	Knot	Appendage	Sustainabili	Component	Template
			Digital world	Electrostatic	Conductor	User	Design criteria	Properties	Blanket-stitch	Hand drill	Stuffing	Assembly-diagram
			Display	Evaluation	Copper	Variable	Exploded-diagram	Running-stitch	Design criteria	Jelutong	Diagram	Automata
			Input	Feedback	Design criteria	Switch	Function	Seam	Detail	Linkage	Dowel	Axle
			Lever	Motion	Electrical item	Test	Input	Sew	Evaluation	Mark out	Drill bits	Bench hook
			Linkage	Repel	Electricity	Torch	Linkage	Shape	Fabric	Measure	Exploded-diagram	Cam
			Mechanism	Target audience	Electronic item	Wire	Mechanism	Target audience	Sew	Mechanism	Finish	Clamp
			Net	Test	Insulator	Exploded-diagram	Motion	Output	Shape	Model	Follower	
			Output	Monitor	Series circuit	Function	Output	Pivot	Stuffed toy	Research	Frame	
			Pivot	Thumbnail		Net	Pivot				Function	

# SANDY LANE PRIMARY SCHOOL DESIGN TECHNOLOGY OVERVIEW

Year A	KS1	LKS2	UKS2
	Toy Story	Giants	Amazing Adventures in Other Worlds
Final Product			
	Wonderful Worlds	Incredible Journey	Year 6 and the Temple of Doom
Final Product	 		

Year B	KS1	LKS2	UKS2
Summer 1	Pre-historic Predators	Great British Innovators	Wonders of the World
Final Product		  	
Summer 2	Explore, Rescue, Protect	Wild Explores	First, Furthest, Fastest
Final Product			 

# PROGRESSION OF SKILLS



## Design

KS1	LKS2	UKS2
<p>KS1 Design and Technology National Curriculum:</p> <p>Children will be on the exploration and experimenting they did in EYFS, through a variety of creative and practical activities on Magic Mondays, pupils should be taught the knowledge, understanding and skills needed to engage in the process of designing.</p> <p>They should work in a range of relevant contexts.</p> <p>Children design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>• use their knowledge of existing products and their own experience to help generate their ideas</li> <li>• design products that have a purpose and are aimed at an intended user</li> <li>• explain how their products will look and work through talking and simple annotated drawings</li> <li>• design products or packaging using ipads</li> <li>• plan and test ideas using templates and mock-ups</li> <li>• understand and follow simple design criteria</li> <li>• work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment.</li> </ul>	<p>KS2 Design and Technology National Curriculum:</p> <p>Children build on the design skills they learnt in KS1, through a variety of creative and practical activities on Magic Mondays, pupils should be taught the knowledge, understanding and skills needed to engage in the process of designing.</p> <p>They should work in a range of relevant contexts.</p> <p>Children use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.</p> <p>They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and where appropriate computer- aided design.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>• identify the design features of their products that will appeal to a target market</li> <li>• use their knowledge of a range of existing products to help generate their ideas</li> <li>• design innovative and appealing products that have a clear purpose and are aimed at a specific user</li> <li>• explain how particular parts of their products work</li> <li>• use annotated sketches and cross-sectional drawings to develop and communicate their ideas</li> <li>• when designing, explore different initial ideas before coming up with a final design</li> <li>• design products or packaging using ipads</li> <li>• when planning, start to explain their choice of materials and components including function and aesthetics</li> <li>• test ideas out through using prototypes</li> <li>• use applications on the ipad to develop and communicate their ideas</li> <li>• develop and follow simple design criteria</li> <li>• work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment</li> </ul>	<p>LS2 Design and Technology National Curriculum:</p> <p>Children will build on the design skills learnt in KS1 and LKS2, through a variety of creative and practical activities on Magic Mondays, pupils should be taught the knowledge, understanding and skills needed to engage in the process of designing.</p> <p>They should work in a range of relevant contexts.</p> <p>Children use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.</p> <p>They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes and where appropriate computer- aided design.</p> <p>Children can:</p> <ul style="list-style-type: none"> <li>• use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market</li> <li>• use their knowledge of a broad range of existing products to help generate their ideas;</li> <li>• design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user</li> <li>• explain how particular parts of their products work</li> <li>• use annotated sketches, cross-sectional drawings and exploded diagram to develop and communicate their ideas</li> <li>• explore a range of design ideas and clearly communicate final designs</li> <li>• design products or packaging using ipads</li> <li>• consider the availability and costings of resources when planning out designs</li> <li>• work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, entertainment, enterprise, industry and the wider environment</li> </ul>

KS1	LKS2	UKS2
<p>KS1 Design and Technology National Curriculum:</p> <p>Children will be on the exploration and experimenting they did in EYFS, through a variety of creative and practical activities on Magic Mondays, pupils should be taught the knowledge, understanding and skills needed to engage in the process of making.</p> <p>Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].</p> <p>They select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p> <p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>with support, follow a simple plan or recipe</li> <li>begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer</li> <li>select from a range of materials, textiles and components according to their characteristics</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures</li> <li>use a range of materials and components, including textiles and food ingredients</li> <li>with help, measure and mark out</li> <li>cut, shape and score materials with some accuracy</li> <li>assemble, join and combine materials, components or ingredients</li> <li>demonstrate how to cut, shape and join fabric to make a simple product</li> <li>use a basic running stitch</li> <li>cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups</li> <li>begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations</li> </ul>	<p>KS2 Design and Technology National Curriculum:</p> <p>Through a variety of creative and practical activities on Magic Mondays, pupils should be taught the knowledge, understanding and skills needed to engage in the process of making.</p> <p>Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.</p> <p>They select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p> <p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>with growing confidence, carefully select from a range of tools and equipment, explaining their choices</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities</li> <li>place the main stages of making in a systematic order</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures</li> <li>use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components</li> <li>with growing independence, measure and mark out</li> <li>cut, shape and score materials with some degree of accuracy</li> <li>assemble, join and combine material and components with some degree of accuracy</li> <li>demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product</li> <li>join textiles with a running stitch and back stitch technique</li> <li>begin to select and use different and appropriate finishing techniques to improve the appearance of a product</li> </ul>	<p>KS2 Design and Technology National Curriculum:</p> <p>Through a variety of creative and practical activities on Magic Mondays, pupils should be taught the knowledge, understanding and skills needed to engage in the process of making.</p> <p>Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.</p> <p>They select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</p> <p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> <li>independently plan by suggesting what to do next</li> <li>with growing confidence, select from a wide range of tools and equipment, explaining their choices</li> <li>select from a range of materials and components according to their functional properties and aesthetic qualities</li> <li>create step-by-step plans as a guide to making</li> </ul> <p>Practical skills and techniques</p> <ul style="list-style-type: none"> <li>learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures</li> <li>independently take exact measurements and mark out</li> <li>use a full range of materials and components, including construction materials and kits, textiles, and mechanical and electrical components</li> <li>cut a range of materials with precision and accuracy</li> <li>shape and score materials with precision and accuracy</li> <li>assemble, join and combine materials and components with accuracy</li> <li>demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product;</li> <li>join textiles using a greater variety of stitches, such as running stitch, backstitch and overcast stitch</li> <li>refine the finish using techniques to improve the appearance of their product</li> </ul>



## Technical knowledge

KS1	LKS2	UKS2
<p>KS1 Design and Technology National Curriculum:</p> <p>Children build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>They explore and use mechanisms in their products.</p> <p>Children can:</p> <ul style="list-style-type: none"><li>• build simple structures, exploring how they can be made stronger, stiffer and more stable</li><li>• explore and create products using mechanisms, such as levers and sliders</li></ul>	<p>KS2 Design and Technology National Curriculum:</p> <p>Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</p> <p>They understand and use mechanical systems in their products.</p> <p>Children can:</p> <ul style="list-style-type: none"><li>• understand that materials have both functional properties and aesthetic qualities</li><li>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products</li><li>• explain how mechanical systems such as levers create movement</li><li>• use mechanical systems in their products.</li></ul>	<p>KS2 Design and Technology National Curriculum:</p> <p>Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</p> <p>They understand and use mechanical systems in their products. They understand and use electrical systems in their products</p> <p>They apply their understanding of computing to program, monitor and control their products.</p> <p>Children can:</p> <ul style="list-style-type: none"><li>• apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products</li><li>• make and represent simple electrical circuits, such as a series and parallel, and components to create functional products</li><li>• explain how mechanical systems such as sliders create movement</li><li>• apply their understanding of computing to program, monitor and control a product</li></ul>



## Evaluate

KS1	LKS2	UKS2
<p>KS1 Design and Technology National Curriculum: Children explore and evaluate a range of existing products. They evaluate their ideas and products against design criteria in Magic Mondays.</p> <p>Children can:</p> <ul style="list-style-type: none"><li>a explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations;</li><li>b explain positives and things to improve for existing products</li><li>c explore what materials products are made from</li><li>d talk about their design ideas and what they are making</li><li>e as they work, start to identify strengths and possible changes they might make to refine their existing design</li><li>f evaluate their products and ideas against their simple design criteria</li><li>g start to understand that the iterative process sometimes involves repeating different stages of the process</li></ul>	<p>KS2 Design and Technology National Curriculum: Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work in Magic Mondays.</p> <p>They understand how key events and individuals in design and technology have helped shape the world.</p> <p>Children can:</p> <ul style="list-style-type: none"><li>• explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose</li><li>• explore what materials/ingredients products are made from and suggest reasons for this</li><li>• consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product</li><li>• evaluate their product against their original design criteria</li><li>• evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world</li></ul>	<p>KS2 Design and Technology National Curriculum: Children investigate and analyse a range of existing products. They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work in Magic Mondays.</p> <p>They understand how key events and individuals in design and technology have helped shape the world.</p> <p>Children can:</p> <ul style="list-style-type: none"><li>• complete detailed competitor analysis of other products on the market</li><li>• critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make</li><li>• evaluate their ideas and products against the original design criteria, making changes as needed</li></ul>