



Welton St Mary's Church of England Primary Academy



Design Technology Curriculum

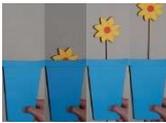
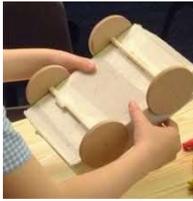
DT – NC Intent

‘Recognising the need is the primary condition for design’ – Charles Eames

‘Design is not just what it looks like and feels like. Design is how it works.’ Steve Jobs

In Design and Technology we are excited to support children in their journey to understanding how products can significantly impact the lives of others as well as the cultural wealth of the nation. Using subject specific vocabulary, children will be encouraged to evaluate aspects of their designs and designs of others to consider why they are successful or how its functionality can be improved. There will be opportunities for children to refine product-specific skills and overcome challenges that will be solved through perseverance, collaboration and critical thinking. As a result, children will be able to use their knowledge and imagination to design, plan, make and evaluate products that solve real and relevant problems.

DT Overview

	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
Year 1 Overview	Shelters- Grandad's Island (structures) Linked to industry 		Fairy Tales (mechanisms) Linked to community (book for family hour) 		Skills focussing on how to make a lever (mechanisms) Linked to playground 	Food Technology 
Final Outcome	Light Holder		Moving part - slider		Moving part-lever	See Food Technology Overview
Key skills	Cut, finish, join		Make simple slider		Levers, cut, finish, join	See Food Technology Overview
Concept focus	Understanding the impact on daily life, the wider world and the cultural wealth of the nation. Critical thinking and evaluation		Imagine, plan and create Critical thinking and evaluation		Problem solving Critical thinking and evaluation	See Food Technology Overview
Year 2 overview	Sliders and Levers (mechanism) Linked to community 	Food Technology 	Moving Vehicles (mechanisms/structures) Linked to playground 		Puppets (textiles) Linked to industry 	

Final outcome	Make a card	See Food Technology Overview	Moving vehicle	A puppet
Key skills	Apply lever and slider skills Cut, finish, join, shape	See Food Technology Overview	Wheels and Axels (new skill)	Threading a needle, knots, thread length, running stitch (new skills)
concept focus	Problem solving Critical thinking and evaluation	See Food Technology Overview	Imagine, plan and create Critical thinking and evaluation	Imagine, plan and create Critical thinking and evaluation

Year 3 overview	Aprons (textiles) Application of sewing skills Linked to home 		Food Technology 	Moving Toy (mechanisms) Linked to leisure 	Packaging (structures) Linked to school 
Final outcome	An apron with decorative attachment		See Food Technology Overview	Moving toy	Box for biscuits/ product to celebrate end of year.
Key skills	Application of KS1 skills and blanket stitch (new skill) to add decorative details (e.g pocket).		See Food Technology Overview	Levers- with linkages (new skill)	Cut, join, finish, shape
concept focus	Problem solving		See Food Technology Overview	Imagine, plan and create	Understanding the impact on daily life, the wider world and the cultural wealth of the nation

Year 4 overview	Levers and Pulleys (mechanisms) Linked to home 	Food Technology 	African Jewellery (mechanisms/textiles) Linked to leisure 	Desk Tidy (structures) Linked to school 
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Final outcome		See Food Technology Overview	Necklace/bracelet	A desk tidy
Key skills	Apply levers from KS1 and linkages from Year 3	See Food Technology Overview	Fastening, button holes, ties	Sustainability, stability, structure
concept focus	Understanding the impact on daily life, the wider world and the cultural wealth of the nation Critical thinking and evaluation	See Food Technology Overview	Imagine, plan and create Critical thinking and evaluation	Problem solving Critical thinking and evaluation

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Year 5 overview	<p style="text-align: center;">Food Technology</p> 	<p style="text-align: center;">Electrical Circuits (electrical)</p> <p>Linked to industry</p> 	<p style="text-align: center;">Garden Seat (structure)</p> <p>Linked to wider world</p> 	<p style="text-align: center;">Embroidery –William Morris (textiles)</p> <p>Linked enterprise</p> 
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Final outcome	See Food Technology Overview	Retrieval quiz game	Create garden seat for book character	To create an embroidery design or pencil case/purse/cushion
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Key skills	See Food Technology Overview	Circuits; switches/buzzers	Cut, join, finish, shape	Application of KS1 and LKS2 skills, chain stitch, French seams
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concept focus	See Food Technology Overview	Imagine, plan and create Problem solving	Understanding the impact on daily life, the wider world and the cultural wealth of the nation Critical thinking and evaluation	Imagine, plan and create Critical thinking and evaluation
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Year 6 overview	Gears (mechanism)	Construct a Shelter (structures)	Food Technology	Props for Year 6 Leavers Concert
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	<p>Linked to wider world</p> 	<p>Linked to industry</p> 		<p>Linked to enterprise</p>
Final outcome	<p>Application of Year 5 solar system to create moving product using gears and lever</p>	<p>Shelter suitable for industry, wider world, enterprise</p>	<p>See Food Technology Overview</p>	
Key skills	<p>Gears, levers</p>	<p>Cut, join, finish, shape</p>	<p>See Food Technology Overview</p>	
concept focus	<p>Imagine, plan and create Critical thinking and evaluation</p>	<p>Understanding the impact on daily life, the wider world and the cultural wealth of the nation Critical thinking and evaluation</p>	<p>See Food Technology Overview</p>	

Core Concepts

CONCEPT – Critical thinking and evaluation

- Imagine, plan and create
- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- Critique, evaluate and test their ideas and products and the work of others

CONCEPT – problem solving

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world

CONCEPT – Understanding the impact on daily life, the wider world and the cultural wealth of the nation

- 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

CONCEPT – Imagine, plan and create

- 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

Progression of skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Textiles		<p>Begin to identify different types and textures of fabric and materials.</p> <p>Be able to thread a needle.</p> <p>Be able to knot a length of thread</p> <p>Be able to use a running stitch.</p> <p>Gain confidence in stitching two pieces of fabric together using a running stitch.</p> <p>Change and modify threads and fabrics by knotting, fraying, fringing, pulling threads, twisting, plaiting.</p> <p>Use appropriate language to describe colours, media, equipment and textures.</p>	<p>Apply decoration using beads, buttons, pockets etc.</p> <p>Be able to use a blanket stitch.</p> <p>Show further experience in changing and modifying threads and fabrics, knotting, fraying, fringing, pulling threads, twisting, plaiting.</p> <p>Become competent in using a running stitch.</p> <p>Use appropriate language to describe colours, media, equipment and textures.</p> <p>Use sketch books to create design.</p>	<p>Experiment with different fastenings – eg hook and eye, button and loop and select one that is appropriate for their piece of jewellery.</p>	<p>Be able to use a chain stitch.</p> <p>Be able to create a French knot</p> <p>Use a number of different stitches creatively to produce different patterns and textures.</p> <p>Demonstrate experience in combining techniques to produce an end piece.</p> <p>Show awareness of the work of others and describe how their work has impacted on the world.</p> <p>Use IT and sketchbooks to collect and record visual information from</p>	

					different sources to inform their ideas.	
Mechanisms and mechanical systems	<p>Experiment with making a simple slider and explain how to create it.</p> <p>Create a product that includes a slider – linked to community.</p> <p>Experiment with the mechanism of a simple lever and explain how to create it.</p>	<p>Become confident in creating both sliders and levers within a single product.</p> <p>Use an axle and a wheel mechanism in combination to create a moving product – linked to playground.</p>	<p>Experiment with creating a more complex lever that uses linkages or a linked lever system.</p> <p>Use language such as fixed, pivot and moving parts to explain how their lever works.</p> <p>Create a product that includes a complex lever – linked to leisure.</p>	<p>Explain what a pulley is, how to use it and have a go at creating one in isolation.</p> <p>Create a product that includes a pulley - linked to home.</p>		<p>Experiment with creating a gear mechanism and explain how to create and use it.</p> <p>Decide on and make an appropriate lever.</p> <p>Use a lever and gears mechanism in combination to create a product- linked to the wider world.</p>
Structures	<p>Choose suitable structure materials – linked to industry</p> <p>Practise measuring, cutting and joining materials using appropriate tools e.g. ruler and scissors.</p> <p>Begin to consider the overall finish to the product.</p>	<p>Choose suitable structure materials – linked to playground</p> <p>Explain the purpose of an axle and experiment with making one.</p> <p>Become confident when measuring, cutting and joining materials and use tools such as a saw safely.</p> <p>Begin to consider the purpose of shape when designing and making a product.</p>	<p>Consider the shape, size and weight of the product that needs packaging.</p> <p>Choose a suitable structure material and consider the effects on the environment – linked to school.</p> <p>Experiment with making 2D nets into 3D shapes.</p>	<p>Use tools such as a manual drills safely.</p> <p>Consider the shape, size and weight of the product and who it is for.</p>	<p>Consider the shape, size and weight of the product and who it is for.</p> <p>Evaluate the effectiveness of the product for its purpose</p>	<p>Choose suitable materials by considering their specific properties, function durability and sustainability.</p> <p>Use all skills and knowledge to be able to build a suitable structure, explain decisions made and test its effectiveness.</p>
Electrical circuits					Experiment with constructing a simple series electrical circuit including cells, wires,	

					<p>bulbs, switches and buzzers.</p> <p>Create a product using the necessary electrical components – linked to industry.</p> <p>Consider the products shape, finish and safety.</p> <p>Use appropriate tools e.g wire cutters.</p>	
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Assessment

This has been written using the Design and Technology Association Progression Framework to support our assessment and progression of skills.

Assessment of knowledge will be through ability to understand use and apply knowledge in structures, electrical, textiles, mechanical systems.

CONCEPT – Critical thinking and evaluation

- Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- Imagine, plan and create
- Critique, evaluate and test their ideas and products and the work of others
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	By the End of Y2	By the end of Y4	By the end of Y6
Expected	<p>I can use my own ideas to make something.</p> <p>I can explain to someone else how I want to make my product.</p> <p>I can describe how something works.</p> <p>I can explain what went well with my work.</p> <p>I can explain why I have chosen specific materials.</p> <p>I can make simple judgements about my products and ideas against the design criteria.</p> <p>I can ask questions and explore existing products – what the products are for, who the products are for, how they work, how they are used, where they might be used, what materials the products are made from, what I like and dislike about the products</p>	<p>I can explain how I have improved my original design..</p> <p>I can identify the strengths and areas for development in my ideas and products</p> <p>I can use my design criteria to evaluate my completed product.</p> <p>I can investigate and analyse how well the products are designed, how well the products are made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes, how well products meet user needs and wants.</p> <p>I can investigate and analyse who designed the product, where different products were designed and made, when they were designed and made and whether the products can be recycled or reused</p>	<p>I can evaluate appearance and function against original criteria.</p> <p>I can show that I can test and evaluate my products.</p> <p>I can consider the views of others, including intended user, to improve my work.</p> <p>I can critically evaluate the quality of the design, manufacture and fitness for purpose for my product as I design and make it.</p> <p>I can investigate and analyse how well the products are designed, how well the products are made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes, how well products meet user needs and wants.</p> <p>I can investigate and analyse the cost of making the product, how innovative products are, how sustainable the materials used in products are and the impact that the product has</p>

Relevant people/designers	Steve Jobs, Apple, Google, Dyson		
Concept: Problem solving <ul style="list-style-type: none"> Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world 			
	By the end of Y2	By the end of Y4	By the end of Y6
Expected	<p>I can make my model stronger.</p> <p>I can join materials and components in different ways.</p> <p>I show resilience when faced with a problem</p> <p>I can ask for help when faced with a problem</p>	<p>I can persevere and adapt my work when my original ideas do not work.</p> <p>I can select the most appropriate tools and techniques for a given task.</p> <p>I can demonstrate resourcefulness when tackling practical problems</p>	<p>I can suggest alternative plans; outlining the positive features and drawbacks.</p> <p>I can work within a budget.</p> <p>I can demonstrate resourcefulness when tackling practical problems</p>
Relevant people/designers	Steve Jobs, Apple, Google, Dyson		
Concept: Understanding the impact on daily life, the wider world and the cultural wealth of the nation. <ul style="list-style-type: none"> 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 			
	By the End of Y2	By the end of Y4	By the end of Y6
Expected	<p>I can work confidently within a range of contexts such as story-based, home, school local, playgrounds, industry</p> <p>I can say whether the product is for me or another user and the impact it will have</p> <p>I can describe what my product is for and how it works</p>	<p>I can work confidently within a range of contexts such as home, school, culture, enterprise, industry.</p> <p>I can describe the purpose of the products and its intended impact for its user</p> <p>I can explain the design choices for the product that will appeal to the intended user</p>	<p>I can show that I consider culture and society in my plans and designs.</p> <p>I can use market research, surveys, interviews, questionnaires and web-based resources to inform my plans and ideas.</p> <p>I can identify the needs, wants, preferences of the intended users</p>

	I can say how my product is suitable for its user	I can gather information about the needs and wants of the intended users and use this to shape the design choices I know about different inventors, designers, engineers and manufacturers who have developed groundbreaking products and the impact that they have had on daily life, the wider world and the cultural wealth of the nation	I can explain how a product will appeal to a specific audience. I know about different inventors, designers, engineers and manufacturers who have developed groundbreaking products and the impact that they have had on daily life, the wider world and the cultural wealth of the nation
Relevant people/ Designers	Steve Jobs, Apple, Google, Dyson		
<p>Concept: Imagine, plan, create</p> <ul style="list-style-type: none"> 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 			
	By the end of Y2	By the end of Y4	By the end of Y6
Expected	<p>I can think of an idea and plan what to do next drawing on my own experiences.</p> <p>I can use my knowledge of existing products to help me with my own ideas</p> <p>I can communicate a simple plan before making through talking and drawing</p> <p>I can choose tools and materials and explain why I have chosen them.</p> <p>I can explore materials, components, construction kits, make templates</p> <p>I can talk about my design idea and what I</p>	<p>I can produce a step by step plan and explain it.</p> <p>I can select tools and equipment suitable for the task and explain my choices</p> <p>I can use ideas from other people when I am designing.</p> <p>I can model my ideas through prototypes and patterns</p> <p>I can use annotated drawings, cross-sectional drawing and exploded diagrams to develop and communicate ideas.</p> <p>I can follow a step-by-step plan, choosing the right equipment and materials.</p>	<p>I can model my ideas through prototypes and patterns</p> <p>I can produce a step by step plan, appropriate list of tools, equipment and materials needed</p> <p>I can use annotated drawings, cross-sectional drawing and exploded diagrams to develop and communicate ideas.</p> <p>I can use Computer aided design to develop and communicate ideas</p> <p>I can make changes to my plan having identified areas for development.</p>

	<p>am making</p> <p>I can make a product that moves.</p> <p>I know about the simple working characteristics of materials and components</p> <p>I know about the movement of simple mechanisms like levers, sliders, wheels and axles and can explain how they work and may be used for</p> <p>I know how to make structures stronger, stiffer and more stable</p> <p>I know the correct vocabulary for the projects I have made</p> <p>I can use a range of materials, components, construction kits and mechanical components</p> <p>I can measure, mark out, cut and shape materials and components</p> <p>I can assemble, join and combine materials and components</p> <p>I can use finishing techniques, including those from art and design</p> <p>I can follow procedures for safety</p>	<p>I can use my learning from science to help design and make products that work</p> <p>I can use my learning in maths to help design and make products that work</p> <p>I know the correct vocabulary for the projects I am undertaking</p> <p>I know that materials have both functional properties as well as aesthetic qualities</p> <p>I know and can explain how to make a strong structure</p> <p>I can follow procedures for safety</p> <p>I can use what I know from KS1 about materials and components and build on this knowledge when using construction kits, textiles, mechanical components and when building structures</p> <p>I can measure, mark out, cut, shape materials and components with some accuracy</p> <p>I can assemble, join and combine materials and components with some accuracy</p> <p>I can apply a range of finishing techniques, including those from art and design with some accuracy</p>	<p>I can make a prototype before make a final version and refine my plan accordingly.</p> <p>I can use a range of tools and equipment competently.</p> <p>I can come up with a range of ideas after collecting information from different sources.</p> <p>I know that mechanical and electrical systems have an input, process and output</p> <p>I can use my learning from science to help design and make products that work</p> <p>I can use my learning in maths to help design and make products that work</p> <p>I know the correct vocabulary for the projects I am undertaking</p> <p>I know how to programme a computer to control my products</p> <p>I know how mechanical systems such as cams, pulleys and gears create movement</p> <p>I know how to reinforce and strengthen a 3D frame</p> <p>I can follow procedures for safety</p> <p>I can accurately measure, mark out, cut and shape materials and components</p> <p>I can accurately assemble, join and combine materials and components</p> <p>I can accurately apply a range of finishing techniques including those from art and design</p>
Relevant people/Designers	Steve Jobs, Apple, Google, Dyson		