



## Intent – What do we want to achieve?

At Hardy Mill Primary School, we value Design and Technology as an important part of the children's entitlement to a broad and balanced curriculum **to be the best that we can be**. Design Technology allows our children to be creative learners and promotes imagination through a practical subject that will excite and engage all. We provide opportunities for our children to design and make a product in response to a design brief. At every stage, children will be encouraged to ask and answer questions to enable them to evaluate their designs. Design and Technology involves children learning about the world we live in and developing a wide range of knowledge and skills through designing and making. By the time they leave us the children should have developed key skills in problem solving, become reflective learners and understand how to work safely with a variety of tools and materials.

## Implementation – How do we organise learning?

To ensure high standards of teaching and learning in Design and Technology, we implement a curriculum that is progressive through the whole school. Design and Technology is taught once every term each year, focusing on knowledge and skills stated in the National Curriculum. The children take part in different projects over their time at Hardy Mill. To support teaching, staff have access to a range of resources and planning, influenced by the 'Plan Bee' scheme of work, clearly setting out the skills that need to be taught in each unit.

Children experience an array of different progressive and linkable skills and techniques ensuring that they are constantly building on previous learning. This enables them to expand their knowledge and understanding of problem solving, designing and constructing different products. For each project, children follow the research, design, make and evaluate sequence allowing children time to reflect upon their design and products and think of ways they could be improved or adapted. Teachers' support and modelling of increasingly progressive skills enables children to create products of a high-quality throughout the school. Children are given a design brief to put the need for the product into context and this is referred to in each lesson. During Design and Technology lessons, safety is explained and clearly modelled at the start of and throughout each lesson thus promoting awareness of health and safety issues.

Each child has a Design and Technology booklet to complete for each project which includes a cover sheet for the children to see the progression of lessons and the vocabulary they are learning. Each booklet is adapted to the product the child is making to ensure the delivery of the design process. We give the children ownership of their booklets to foster their sense of creativity.

National Curriculum - Design Techno	ology		
	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		
	<ul> <li>The national curriculum for design and technology aims to ensure that all pupils:</li> <li>develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world</li> <li>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</li> <li>critique, evaluate and test their ideas and products and the work of others</li> <li>understand and apply the principles of nutrition and learn how to cook.</li> </ul>		
EYFS	KS1	KS2	
Expressive Arts and Design ELG: Creating with Materials Children at the expected level of development will: - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; - Share their creations, explaining the process they have used; - Make use of props and	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: <b>Design</b> • design purposeful, functional, appealing	<ul> <li>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].</li> <li>When designing and making, pupils should be taught to:</li> <li>Design <ul> <li>use research and develop design criteria to inform the design of innovative, functional,</li> </ul> </li> </ul>	
- Make use of props and materials when role playing characters in narratives and	<ul> <li>design purposeful, functional, appealing products for themselves and other users based on design criteria</li> </ul>	appealing products that are fit for purpose, aimed at particular individuals or groups	

stories. <b>ELG: Being Imaginative and</b> <b>Expressive</b> Children at the expected level of development will: - Invent, adapt and recount narratives and stories with peers and their teacher; - Sing a range of well-known nursery rhymes and songs; Perform songs, rhymes, poems and stories with others, and – when appropriate – try to move in time with music.	<ul> <li>generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</li> <li>Make         <ul> <li>select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</li> <li>select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</li> </ul> </li> </ul>	<ul> <li>generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> <li>Make         <ul> <li>select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> <li>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</li> </ul> </li> </ul>
	Evaluate	Evaluate
	<ul> <li>explore and evaluate a range of existing products</li> <li>evaluate their ideas and products against design criteria Technical knowledge</li> <li>build structures, exploring how they can be made stronger, stiffer and more stable</li> <li>explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products</li> <li>Cooking and nutrition</li> <li>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</li> </ul>	<ul> <li>investigate and analyse a range of existing products</li> <li>evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> <li>understand how key events and individuals in design and technology have helped shape the world Technical knowledge</li> <li>apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> <li>understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</li> <li>understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</li> </ul>

		Pupils should be use the bay varied die	rell, now and in later li taught to: isic principles of a hea t to prepare dishes id where food comes fr	lthy and	pro Cooking ar As part of taught how nutrition a cooking in great expre to cook is of themselves in later life Pupils show • und her • pre say tec	oly their understanding ogram, monitor and co ad nutrition their work with food, p v to cook and apply the and healthy eating. Ins pupils will also open a essions of human creat a crucial life skill that and others affordably e. ald be taught to: derstand and apply the althy and varied diet pare and cook a variet youry dishes using a ra hniques derstand seasonality, a w a variety of ingredie	ntrol their products. pupils should be e principles of tilling a love of a door to one of the ivity. Learning how enables pupils to feed and well, now and e principles of a y of predominantly inge of cooking nd know where and
Hardy Mil	l Long Term Plan – Desig	In Technology			Tec	ired, caught and proce	
Huruy Mit	Autumn		Spring 1	Spi	ring 2	Summer 1	Summer 2
EYFS	All about me/ People who help us All About Me, My Family, Friends and Pets My Emotions People Who Help Us	Into the woods/ Celebrate good times Autumn Into the Woods Diwali Christmas Christmas around the world	Our world and beyond Winter Where we live Chinese New Year Different Countries Our Planet/Space DT focus – make a rocket	Food gla Health What c n Food A W Where come DT foc techn	orious food ay Eating our bodies eed round the Vorld does food e from? us – food cology –	Can we explore it? Life Cycles Growing Mini Beasts Habitats DT focus – make a mini-beast house	<b>In and around the</b> <b>Sea</b> Under the Sea Hot and Cold Places

KS1	Cycle A	Stable Structures		Perfect Pizzas	Moving Minibeasts
Ÿ.	Cycle B	Eat More Fruit and Vegetables	Making Fire Engines		Puppets
LKS2	Cycle A	Seasonal Food		British Inventors	Making Mini Greenhouses
LK	Cycle B	Seasonal Stockings		Light Up Signs	Story Books
S2	Cycle A	Brilliant Bags		Bird House Builders	Programming Pioneers
UKS2	Cycle B	Building Bridges		Gears or Pulleys	Bread

## Impact

To evaluate how well our children are learning and check that they are remembering more and applying more in design and technology, we use a combination of formative and summative assessments, pupil interviews, project booklet scrutinies and lesson observations.

At Hardy Mill, we want our children to make outstanding progress; show positive attitudes to their learning; understand their role and impact they can have on the wider world; appreciate our differences and beliefs; participate in the community and respect others.

The outcomes of assessments and observations of our pupils demonstrate that they are very well prepared for the next stage in their design and technology education when they leave Hardy Mill and make good progress from their starting points.

How do we	know our children have made progress? What are their end points?							
End of	• Safely use and explore a variety of materials tools and techniques, experimenting with colour, design, texture, form and							
EYFS	function.							
	<ul> <li>Share their creations, explaining the process they have used.</li> </ul>							
	Make use of props and materials when role playing characters in narratives and stories.							
End of	Design:							
KS1	<ul> <li>Design purposeful, functional, appealing products for themselves and other users based on design criteria.</li> </ul>							
	• Generate, develop, model and communicate my ideas through talking, drawing, templates and teacher-made mock-ups							
	Make:							
	<ul> <li>Select from and use a range of tools and equipment to perform practical tasks.</li> </ul>							
	<ul> <li>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</li> </ul>							
	Evaluate:							
	<ul> <li>Explore and evaluate a range of existing products.</li> </ul>							
	Evaluate their ideas and products against the design criteria							
	Technical Knowledge:							
	<ul> <li>Build structures, exploring how they can be made stronger, stiffer and stable</li> </ul>							
	• Explore and use mechanisms (levers, sliders, wheels and axles) in their products.							
	Cooking and Nutrition:							
	<ul> <li>Use the basic principles of a healthy and varied diet to prepare dishes.</li> </ul>							
	Understand where food comes from							
End of	Design:							
LKS2	• 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 and annotated sketches.							
	Make:							
	<ul> <li>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</li> </ul>							
	<ul> <li>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</li> </ul>							
	Evaluate:							
	<ul> <li>Investigate and analyse a range of existing products</li> </ul>							
	Evaluate their ideas and products against their own design criteria							
	Understand how key events and individuals in design and technology have helped shape the world							
	Technical Knowledge:							

	<ul> <li>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</li> </ul>
	• 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]
	Cooking and Nutrition:
	<ul> <li>Understand and apply the principles of a healthy and varied diet</li> </ul>
	Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
	<ul> <li>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</li> </ul>
End of	Design:
UKS2	• 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 and 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:
	<ul> <li>Investigate and analyse a range of existing products</li> </ul>
	• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
	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]
	<ul> <li>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers</li> </ul>
	and motors]
	<ul> <li>Apply their understanding of computing to program, monitor and control their products.</li> </ul>
	Cooking and Nutrition:
	<ul> <li>Understand and apply the principles of a healthy and varied diet</li> </ul>
	<ul> <li>Onderstand and apply the principles of a neutring and varied diet</li> <li>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</li> </ul>
	• Frepare and cook a variety of predominantity savoury disties using a range of cooking techniques

	EYFS	KS1		EYFS KS1		LK	S2	UK	UKS2	
		Y1	Y2	Y3	Y4	Y5	Y6			
Knowledge and skills materials/ structures	Explores different techniques for joining materials (Glue Stick). Can join and connect different construction materials –duplo, large wooden bricks to represent ideas. Explores different techniques for joining materials (Glue Stick). Explores different techniques for joining materials (Glue Stick, PVA)	Y1 Stable Structures Design I can des the tedd I can dev commun through drawing Make I can exp assemblin structure stronger, stable. I can sele skills and explainin I can sele	Y2 <u>s – Cycle A</u> ign a bridge for y to stand on. velop and nicate my ideas talking and			Y5 Bird House Builde Design I know wh diagram i to identify structure. I can desi for a part taking int bird's nee I can crea diagram o bird house I can draw diagram. I can draw diagram.	Y6 ers – Cycle A hat a flat pack s and can use i g each part of a gn a bird house icular bird, to account the ds. te a flat pack of a constructed e. w an exploded			
	Explores different techniques for joining materials (Glue Stick, PVA, Masking Tape,	my struc • I can use technique the struc creating.	tion kits to build ture e simple finishing es suitable for ture I am			tools and when mal house. • I can crea	e. ct appropriate materials to us king a bird ite a sturdy bir me using wood			
	•	creating. <u>Evaluate</u>	ture I am lore a range of			• I can crea	me using Isure, clai			

Can join and connect different construction materials –lego, small wooden bricks to represent ideas. Can join and connect a variety of construction materials to represent ideas.	existing freestanding structures in the school and local environment • I can evaluate how effective my free-standing structure was and explain why it was good and/or how it could be better	<ul> <li>I can use a hand drill to drill a hole in a piece of wood.</li> <li>I know the safety rules I need to follow when doing woodwork</li> <li>I can apply my understanding of how to strengthen, stiffen and reinforce more complex structures</li> <li>Evaluate <ul> <li>I can investigate the appearance and function of a variety of different bird houses.</li> <li>I can identify what materials have been used to construct a variety of bird houses and suggest how the parts have been joined together.</li> <li>I can evaluate my finished bird house, taking into account the views of others to improve my work.</li> </ul> </li> </ul>
		Building Bridges – Cycle BDesign• I can design, make and evaluate a prototype suspension bridge using a

		scale of 1:100 according
		to specific design criteria
		Make
		• I can test the arch
		heights to see which can
		bear the most load.
		• I can make an arch
		frame.
		• I can build a truss bridge
		spanning a width of
		40cm using paper straws.
		5
		<u>Evaluate</u>
		• I can toot the strength of
		• I can test the strength of different beam shapes
		using paper and card.
		• I can use a fair test to
		evaluate the strength of
		my truss bridge.
		<u>Technical Knowledge</u>
		• I can explain how
		suspension bridges use
		tension forces to work.
		• I know what beams and
		pillars are and how they
		are used in bridge
		construction.
		• I can predict which
		beams will be strongest
		from their cross-section.
		• I can explain how arches
		work to make bridges
		stronger.
		<ul> <li>I can explain what a</li> </ul>
		truss is and how trusses
		truss is und now trusses

			<ul> <li>make bridges stronger.</li> <li>I can identify the three types of trusses commonly used in bridge design.</li> </ul>
Knowledge	<u> Moving Minibeasts – Cycle A</u>	<u>Storybooks – Cycle B</u>	<u>Gears and Pulleys – Cycle B</u>
and skills	Design	<u>Design</u>	Design
Mechanical systems	<ul> <li>Design <ul> <li>I can design a moving minibeast picture to include a variety of moving mechanisms.</li> <li>I can develop and communicate my ideas through talking and drawings.</li> </ul> </li> <li>Make <ul> <li>I can plan by suggesting what to do next.</li> <li>I can select and use tools, explaining my choices, to cut, shape and join paper and card.</li> <li>I can use simple finishing techniques suitable for the product I am creating.</li> <li>I can use a pivot and levers.</li> <li>I can use a pivot and lever mechanism using card and a split pin.</li> <li>I can make a wheel</li> </ul> </li> </ul>	<ul> <li>I can design a page of a storybook with moving mechanisms using an annotated sketch</li> <li>Make         <ul> <li>I can make a page of a storybook with moving mechanisms</li> <li>I can use a paper concertina to make an object pop out of a book.</li> <li>I can arrange and stick paper between pages to create a pop-out.</li> <li>I can use levers to create moving parts.</li> </ul> </li> <li>Evaluate         <ul> <li>I can explore moving parts in storybooks, suggesting how they work and what purpose they serve.</li> <li>I can investigate and evaluate products with lever and linkage systems</li> <li>I can evaluate my</li> </ul> </li> </ul>	<ul> <li>I can generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.</li> <li>Develop a simple design specification to guide their thinking.</li> <li>Develop and communicate ideas through discussion, annotated drawings, exploded drawings, exploded drawings and drawings from different views.</li> <li>Make</li> <li>Produce detailed lists of tools, equipment and materials.</li> <li>Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</li> <li>Select from and use a range of tools and equipment to make products that that are accurately assembled and</li> </ul>

		<ul> <li>mechanism using card and a split pin.</li> <li>I can understand that different mechanisms produce different types of movement.</li> <li>I know and can use technical vocabulary relevant to the project.</li> </ul> Evaluate <ul> <li>I can explore a range of existing books and everyday products that use simple sliders and levers.</li> <li>I can evaluate my product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.</li></ul>	finished product against the design criteria and explain why it was good and/or how it could be better Technical Knowledge • I can explain what the words 'linkage', 'pivot', 'rotate' and 'lever' mean.	<ul> <li>well finished.</li> <li>Work within the constraints of time, resources and cost.</li> <li>Evaluate <ul> <li>Compare the final product to the original design specification.</li> <li>Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</li> <li>Consider the views of others to improve their work.</li> <li>Investigate famous manufacturing and engineering companies relevant to the project.</li> </ul> </li> </ul>
<u>Knowledge</u> <u>and skills</u> textiles	Can make props and costumes for different role play scenarios - instruments	Puppets – Cycle A         Design         I can design a puppet to meet the design criteria         I can develop and communicate my ideas through talking and drawings         Make         I can cut out felt using a simple template.         I can use running stitch to join two pieces of	<ul> <li>Seasonal Stockings - Cycle B</li> <li>Design <ul> <li>I know that products that are woven together are called textiles.</li> <li>I can design a stocking to meet the design criteria</li> <li>I can create an annotated sketch</li> </ul> </li> <li>Make <ul> <li>To explore some ways in which textiles are joined and decorated.</li> </ul> </li> </ul>	<ul> <li>Brilliant Bags – Cycle A </li> <li>Design <ul> <li>I can describe what the job of a fashion designer entails.</li> <li>I can design a bag to meet the design criteria</li> <li>I can create a prototype</li> </ul> </li> <li>Make <ul> <li>To explore some ways in which textiles are joined and decorated.</li> <li>I know what a pattern</li> </ul> </li> </ul>

		<ul> <li>fabric together.</li> <li>I can use overstitch to join two pieces of fabric together.</li> <li>I can add pieces of felt and other materials to my puppet to create features, such as eyes, whiskers and ears</li> <li>Evaluate <ul> <li>I can evaluate my puppet against the design criteria and explain why it was good and/or how it could be better</li> <li>I can explore a range of existing puppets and their features</li> </ul> </li> </ul>	<ul> <li>I can sew a back stitch.</li> <li>I can sew an over stitch.</li> <li>I can sew a running stitch.</li> <li>I know what a pattern piece is and can use one when making my stocking</li> <li>Evaluate <ul> <li>I can evaluate my stocking against the design criteria and explain why it was good and/or how it could be better</li> <li>I can research and evaluate existing stockings</li> </ul> </li> </ul>	<ul> <li>piece is and can use one when making my bag</li> <li>I can sew an appliqué decoration.</li> <li>I can sew a back stitch.</li> <li>I can sew an over stitch.</li> <li>I can sew a running stitch.</li> <li>I can sew a hem</li> </ul> Evaluate <ul> <li>I can research and evaluate existing bags</li> <li>I can evaluate my finished product against the design criteria and consider the views of others to improve my work</li> </ul>
Knowledge	Can use some	<u>Perfect Pizza – Cycle A</u>	<u>Seasonal Food – Cycle A</u>	<u>Bread – Cycle B</u>
and skills	cooking techniques	Design	Design	Design
food and nutrition	(spreading, cutting,) – Sandwiches for Diwali party. Can use some cooking techniques (spreading, cutting,	<ul> <li>I can say where food comes from</li> <li>I can design and make a healthy pizza following given criteria.</li> <li>I can explain why each of the food groups is important for a balanced diet.</li> <li>I can identify which food group a variety of pizza</li> </ul>	<ul> <li>I know about seasonality in relation to food products</li> <li>I know where and how a variety of ingredients are grown, reared, caught and processed.</li> <li>I can discuss the benefits and problems of unseasonal food being available in shops all</li> </ul>	<ul> <li>I can explain how bread products are an important part of a balanced diet and can be eaten in different ways.</li> <li>I can understand how ingredients can be altered and mixed to create different effects.</li> <li>I can design a new bread product for a particular</li> </ul>

r			,
threading, coring)	toppings belong to.	year round.	person or event using a
Fruit Kebab	<u>Make</u>	<ul> <li>I can design a soup for a</li> </ul>	cross-sectional diagram
	• I can cut, peel and grate	particular event.	Make
Can use some	with increasing	Make	• I can weigh and measure
cooking	confidence	• I can peel, chop and slice	ingredients using scales
techniques		vegetables.	<ul> <li>I can follow a recipe to</li> </ul>
	Evaluate	• I can follow a recipe to	make bread.
cutting,	• I can evaluate my	make soup.	I can knead dough
threading, coring,	finished pizza, saying	•	5
mixing,	what I think and feel	• I can work safely and	• I can shape dough into
grating) Salad	about it.	hygienically.	different designs
gruting) Suluu		Evaluate	• I can work safely and
		• I can research and	hygienically
		evaluate existing soups.	
	Eat More Fruit and Vegetables –	<ul> <li>I can evaluate my soup</li> </ul>	<u>Evaluate</u>
	<u>Cycle B</u>	against the design criteria	<ul> <li>I can investigate and</li> </ul>
		and explain why it was	evaluate existing bread
	<u>Design</u>	good and/or how it could	products according to
	<ul> <li>I can name a variety of</li> </ul>	5	their characteristics.
	fruits and vegetables and	be better	• I can evaluate my
	understand where they		finished product against
	come from		• • • •
			the design criteria and
	Make		consider the views of
	• I understand basic food		others to improve my
	hygiene, e.g. washing		work
	hands, tying long hair		
	back and keeping surfaces		
	clean.		
	- 1		
	5		
	and vegetables need to be		
	washed, cut, cored, peeled		
	or grated before they can		
	be eaten.		
	<ul> <li>I can use a knife to cut</li> </ul>		
	some fruits and		
	vegetables in different		
	ways.		

	<ul> <li>I can grate an apple and a carrot.</li> <li>I can peel a banana, apple and cucumber.</li> <li>Evaluate I can evaluate my fruit salad, saying what I think and feel about it.</li> </ul>		
Knowledge and skills programming and electrical systems	Not needed in KS1 (NC)	<ul> <li>Light Up Signs – Cycle B</li> <li>Design <ul> <li>To develop ideas and design a decorative light up sign using an annotated sketch</li> </ul> </li> <li>Make <ul> <li>I can explore materials and lettering techniques to be used in a light up sign.</li> <li>To select and use tools, equipment, materials and components to make the enclosure of a decorative illuminated sign.</li> <li>I can create a simple circuit with incandescent bulbs and a switch.</li> <li>I can describe the difference between an LED and an incandescent light bulb.</li> <li>I can create a simple</li> </ul> </li> </ul>	<ul> <li>Programming Pioneers – Cycle A <ul> <li>I can explain how computers and computer programs are used in a variety of products.</li> <li>I can explain how modern memory chips work to store information.</li> <li>I can write an algorithm to suggest how various appliances might work.</li> <li>I know what a computer engineer is and what they do.</li> <li>I can describe some examples of how computer hardware and software specialists work together to create new products.</li> <li>I can develop and build a prototype pedestrian crossing using computer programming.</li> <li>I can develop, model and communicate ideas for an embedded system which</li> </ul> </li> </ul>

	<ul> <li>circuit with an LED bulb and a resistor.</li> <li>I can make a circuit with a string of LED lights.</li> <li>I can strip, twist and join wire to make permanent connections.</li> </ul> Evaluate <ul> <li>I can explore and analyse existing products</li> <li>I can evaluate my light up sign against the design criteria and explain why it was good and/or how it could be better</li> </ul>	<ul> <li>monitors and controls a door, room or both.</li> <li>I can describe the typical design process for computer-controlled electronic products.</li> <li>I can debug errors in an algorithm.</li> <li>I can suggest ways to change an algorithm to improve a system.</li> <li>I can select and use electronic components to construct a prototype of an embedded computer-controlled room system.</li> </ul>
Inventions and achievements	British Inventors – Cycle AEvaluate• To investigate the invention of the telephone – Alexander Graham Bell• To investigate the invention of the World Wide Web – Tim Berners- Lee• To explore how the invention of reinforced concrete works - W.B. Wilkinson• To investigate the invention of the mackintosh – Charles Macintosh• To reflect on the impacts that inventions have had	<ul> <li>Programming Pioneers – Cycle A Evaluate <ul> <li>I know that Charles Babbage created the first mechanical computer</li> <li>I know that Ava Lovelace is referred to as the world's first computer programmer</li> <li>I know that Steve Jobs and Steve Wozniak co- founded Apple, Inc, to make the first Apple computers</li> </ul></li></ul>

	<ul> <li>on our lives.</li> <li>To investigate the invention of the steam engine – Thomas Savery</li> <li>I can understand how key events individuals in design and technology have helped shape the world.</li> </ul>
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