

Malmesbury Park Primary School Design and Technology (DT) Long Term Plan



	Sub	oject		
Self-Regulation Show an understanding of their own feelings and those of others. Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate. Give focused attention and show an ability to follow instructions involving several ideas or actions. Managing Self Explain the reasons for rules Building Relationships Work and play cooperatively and take turns with others Show sensitivity to their own and to others' needs	Maths • Have a deep understanding of number to 10	CLL Listening, attention and understanding Listen attentively and respond to what they hear with relevant questions, comments and actions during whole class discussions and small group interactions. Make comments about what they have heard and ask questions to clarify their understanding. Hold conversation when engaged in back-andforth exchanges with their teacher and peers. Speaking Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. Offering explanations for why things might happen Express their ideas and feelings about their experiences.	Physical Development • Use a range of small tools, including scissors • Begin to show accuracy and care when drawing	Expressive Arts and Design Creating Materials • Safely use and explore a variety of materials, tools and techniques, experimenting with design and function • Share their creations, explaining thee process they have used

YEAR 1					
	Rationale	Key content from NC	Skills/Processes	Essential Knowledge	Vocabulary
Autumn 1 - 2 weeks	Design, make and evaluate a	<u>Design</u>	Investigate and evaluate:	Prior learning Experience	cut, fold, join, fix
	stable structure such as a	 Design purposeful, 	Look at and handle toy car	of using construction kits	structure, wall, tower,
Stable Structures	toy car garage.	functional and appealing	garages to explore the	to build walls, towers and	framework, weak, strong,
(See Plan Bee resources		products for themselves	features of a stable	frameworks.	base, top, underneath, side,
under DT on Staff	This unit builds upon their	and others based on	structure.		edge, surface, thinner,
Resources)	previous knowledge, skills	design criteria		Experience of using of	thicker, corner, point,
	and concepts developed in	• Generate, develop, model	Draw or photograph the	basic tools e.g. scissors or	straight, curved metal,
(You must complete the 'I	EYFS.	and communicate their	structures they have been	hole punches with	wood, plastic, circle,
am a technologist' proforma		ideas through talking.	exploring and label with the	construction materials e.g.	triangle, square, rectangle,
at the end of the unit of	Key learning:		correct technical	plastic, card.	cuboid, cube, cylinder
work - see DT on staff		Make	vocabulary in relation to		design, make, evaluate,
resources)	A stable structure is one	Select from and use a	the structure, materials	Experience of different	user, purpose, ideas, design
	that is not likely to fall	range of tools and	used and shapes e.g. wall,	methods of joining card and	criteria, product, function
	over.	equipment to perform	tower, framework, base,	paper.	
		practical tasks e.g.	joint, metal, wood, plastic,		
	Layering cardboard makes	cutting, joining and	brick, triangle, square,	Designing	
	it stronger.	finishing	rectangle, cuboid, cube.	Generate ideas based on	
	Diagramia in linkanainka	Select from and use a	Focused Tasks	simple design criteria and	
	Plastic is lightweight. Plastic can be stiff, strong	wide range of materials	Measuring, marking out,	their own experiences, explaining what they could	
	and flexible.	and components, including construction materials	cutting, shaping, joining and	make.	
	una fiexible.	construction materials	finishing techniques with a	make.	
	Wood can be heavy. It is	Evaluate	range of tools and new and	Develop, model and	
	normally stiff and strong.	• Explore and evaluate a	reclaimed materials that	communicate their ideas	
	Some types of wood are	range of existing	children are likely to use to	through talking, mock-ups	
	weaker than others.	products	make their structures.	and drawings.	
	Woulder Mail officers.	• Evaluate their ideas and	make men en derdi es.	and ar arrings.	
		products against design	Build and explore a variety	Making	
		criteria	of freestanding structures	Plan by suggesting what to	
			using construction kits,	do next.	
			such as wooden blocks,		
			interconnecting plastic	Select and use tools, skills	
			bricks and those that make	and techniques, explaining	
			frameworks	their choices.	
			Fold paper or card in	Select new and reclaimed	
			different ways to make	materials and construction	

			freestanding structures, using masking tape where necessary to make joins. Learn how folding materials can make them stronger, stiffer, stand up and be more stable Design, make and evaluate Simple design criteria Talking, drawing and making mock-ups of their ideas with construction kits and other materials. Plan the order in which the structures will be made. Evaluate their developing ideas and final products against original design criteria.	kits to build their structures. Use simple finishing techniques suitable for the structure they are creating. Evaluating Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. Technical knowledge and understanding Know how to make freestanding structures stronger, stiffer and more stable. Know and use technical	
				stronger, stiffer and more stable.	
Autumn 2					
Spring 1	Nacion make and analysts	Degion	Food page against abillian	Duian la annina Comaniana	anany vanahiilaa i
Spring 2 - 2 weeks Eat More Fruit and Veg	Design, make and evaluate a fruit or vegetable kebab for children to promote healthy eating.	 Design Design purposeful, functional and appealing products for themselves 	Food processing skills: Peeling, cutting, slicing, grating & squeezing.	Prior learning Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.	sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing,

(See Plan Bee resources under DT on Staff Resources)

(You must complete the 'I am a technologist' proforma at the end of the unit of work - see DT on staff resources)

This unit builds upon their previous knowledge, skills and concepts developed in EYFS.

Use the Eatwell Guide model talk about the importance of fruit and vegetables in our balanced diet e.g. Why is it good to eat fruit and vegetables? How many pieces of fruit/vegetables do you eat per day? Why is it important to wash fruit/vegetables before we eat them?

Key learning:

Wash hands before working with food.

Keep work surfaces clean.

How to use a knife safely.

Fruit and vegetables are an important part of healthy diet

and others based on design criteria

 Generate, develop, model and communicate their ideas through talking.

Make

- Select from and use a range of tools and equipment to perform practical tasks e.g. cutting
- Select from and use a wide range of materials and components, including ingredients

Evaluate

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

Cooking and Nutrition

- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from

Examine a range of fruit/vegetables.

Handle, smell and taste fruit and vegetables in order to describe them through talking and drawing

Evaluate existing products to determine what the children like best

Food hygiene practices when handling food including the importance of following instructions to control risk.

Use simple utensils and provide opportunities for the children to practise food processing skills such as washing, grating, peeling, slicing, squeezing

Healthy eating advice, including eating more fruit and vegetables

Experience of cutting soft fruit and vegetables using appropriate utensils.

<u>Designing</u>

Design appealing products for a particular user based on simple design criteria.

Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.

Communicate these ideas through talk and drawings.

Making

Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.

Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.

Evaluating

Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.

Evaluate ideas and finished products against design

peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria

				criteria, including intended user and purpose. Technical knowledge and understanding Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell Guide. Know and use technical and sensory vocabulary relevant	
Summer 1				to the project.	
Summer 2					
YEAR 2					
72/11/2	Rationale	Key content from NC	Skills/Processes	Essential Knowledge	Vocabulary
Autumn 1 - 2 weeks	Design, make and evaluate a	Design	Investigate and evaluate:	Prior learning	vehicle, wheel, axle, axle
AGAMMI L WEEKS	'Fire Truck' for the Lead	• Design purposeful,	Explore and evaluate a	Assembled vehicles with	holder, chassis, body, cab
Vehicles	fireman to get to the scene	functional and appealing	range of wheeled products	moving wheels using	assembling, cutting, joining,
(See Plan Bee resources	of a fire quickly.	products for themselves	such as toys and everyday	construction kits.	shaping, finishing, fixed,
under DT on Staff		and others based on	objects.		free, moving, mechanism
Resources)	This will link to and build	design criteria		Explored moving vehicles	names of tools, equipment
	upon knowledge gained in	• Generate, develop, model	Draw an example of a	through play.	and materials used design,
(You must complete the 'I	the Fire of London History	and communicate their	wheeled product, stating		make, evaluate, purpose,
am a technologist' proforma	project. It will further	ideas through talking.	the user and purpose, and	Gained some experience of	user, criteria, functional
at the end of the unit of	develop the skills and		labelling the main parts	designing, making and	
work - see DT on staff	knowledge taught in 'Stable	<u>Make</u>		evaluating products for a	
resources)	Structures' when in Y1.	 Select from and use a 	<u>Focused Tasks</u>	specified user and purpose.	
		range of tools and	Make a product that moves		
	Key learning:	equipment to perform	using construction kits		
		practical tasks e.g.			

A vehicle is something with wheels that transports people or objects.

Vehicles have wheels to make them move.

Wheels are attached by axles.

Axles work in two ways: they are either attached firmly to the wheel so the axle rotates and the wheels turn with it, or the wheels are placed loosely on the axle so that the wheels turn around the axle.

If the wheels are not attached to the axle they need something to stop them falling off e.g. a nut or washer.

cutting, joining and finishing

 Select from and use a wide range of materials and components, including construction materials

Evaluate

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

Technical Knowledge

 Explore and use mechanisms - wheels and axles. Wheels and axles may be assembled as either fixed axles or free axles.

Mark out, hold, cut and join materials and components correctly

Assemble some examples of wheel, axle, axle holder combinations

<u>Design, make and evaluate</u> Generate simple criteria.

Generate, develop and communicate their ideas as appropriate

Make their wheel and axle product using their design ideas and criteria as an ongoing guide.
Add finishing techniques to their product with reference to their design ideas and criteria

Evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.

Developed some cutting, joining and finishing skills with card.

Designing

Generate initial ideas and simple design criteria through talking and using own experiences.

Develop and communicate ideas through drawings and mock-ups.

Making

Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.

Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.

Evaluating

Explore and evaluate a range of products with wheels and axles.

Evaluate their ideas throughout and their products against original criteria. Technical

knowledge and understanding Explore and use wheels, axles and axle holders. Distinguish between fixed	
Explore and use wheels, axles and axle holders. Distinguish between fixed	
axles and axle holders. Distinguish between fixed	
axles and axle holders. Distinguish between fixed	
Distinguish between fixed	
	i
and freely moving axles.	,
	,
Know and use technical	
vocabulary relevant to the	
project.	
Autumn 2	
Autum E	
Spring 1	
Spring 2 - 2 weeks Design, make and evaluate Design Investigate and evaluate: Prior learning template, patter	rn pieces
an animal puppet. • Design purposeful, Explore and compare Explored and used mark out, join, d	•
Textiles Animal Hand functional and appealing fabrics different fabrics. finish features,	
Puppets This is the first experience products for themselves quality mock-up,	•
for the children in sewing. and others based on Make drawings of existing Cut and joined fabrics with brief, design cri	•
(See Plan Bee resources This will be used to build design criteria products, stating the user simple techniques. evaluate, user, p	
under DT on Staff upon as they go through • Generate, develop, model and purpose. Identify and function, needle	
Resources) KS2. and communicate their label, the fabrics, Thought about the user and cotton, fabric, g	
	flue, sewing,
(You must complete the 'I used.	
am a technologist' proforma A puppet is a model version • Select from and use a Focused Tasks Designing Design a functional and	
work - see DT on staff of a person or animal that range of tools and Investigate fabrics to appealing product for a	
resources) is controlled by someone. equipment to perform determine which is best for chosen user and purpose	
practical tasks e.g. the purpose of the product based on simple design	
Puppets can be controlled cutting, joining and they are creating. criteria.	
by strings, sticks or finishing	
people's hands. • Select from and use a Demonstrate the correct Generate, develop, model	
wide range of materials use of appropriate tools to and communicate their	
There are marionette, sock, and components, including mark out, tape or pin the ideas as appropriate	
hand, finger and rod textiles fabric to the templates or through talking, drawing,	
puppets. paper patterns and cut out templates, mock-ups and	
<u>Evaluate</u>	

Fabric can be joined	• Explore and evaluate a	the relevant fabric pieces	information and	
together by sewing.	range of existing	for the product.	communication technology.	
	products			
Fabrics can be joined	 Evaluate their ideas and 	Joining techniques for	<u>Making</u>	
together using running and	products against design	children to practise in	Select from and use a	
over stitch.	criteria	guided groups e.g. running	range of tools and	
		stitch including threading	equipment to perform	
Over stitch is good for		own needle, stapling, lacing	practical tasks such as	
sewing edges together.		and gluing. Talk about the	marking out, cutting, joining	
		advantages and	and finishing.	
Sewing is more secure when		disadvantages of each		
joining fabrics than gluing.		technique.	Select from and use	
			textiles according to their	
		Demonstrate examples of	characteristics.	
		finishing techniques for		
		children to practise in	<u>Evaluating</u>	
		guided groups e.g. sewing	Explore and evaluate a	
		buttons, 3-D fabric paint,	range of existing textile	
		gluing sequins, printing.	products relevant to the	
			project being undertaken.	
		<u>Design, make and evaluate</u>		
		Develop design criteria.	Evaluate their ideas	
			throughout and their final	
		Generate a range of ideas.	products against original	
			design criteria.	
		Through talk, drawings and		
		mock-ups, ask the children	Technical knowledge and	
		to develop and communicate	understanding	
		their ideas. Information and communication	Understand how simple 3-D	
			textile products are made,	
		technology could be used	using a template to create	
		for symmetry and pattern ideas. Choose one idea to	two identical shapes.	
		follow through.	Understand how to isin	
		Tollow Intrough.	Understand how to join fabrics using different	
		Evaluate ongoing work and	techniques e.g. running	
		the final products against	stitch, glue, over stitch,	
		the intended purpose and	stapling.	
		with the intended user,	Stuping.	
		with the intellued user,		

			drawing on the design criteria previously agreed.	Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. Know and use technical vocabulary relevant to the project.	
Summer 1					
Summer 2					
YEAR 3					
	Rationale	Key content from NC	Skills/Processes	Essential Knowledge	Vocabulary
Autumn 1 -					
Autumn 2 - 2 weeks	Design, make and evaluate a Christmas stocking.	<u>Design</u> • Use research and develop	<u>Investigate and evaluate:</u> Investigate a collection of	Prior learning Experience of basic	template, pattern pieces, mark out, join, decorate,
Seasonal Stockings	This project builds upon	design criteria to inform the design of innovative,	Christmas stockings	stitching, joining textiles and finishing techniques.	finish features, suitable, quality mock-up, design
(See Plan Bee resources	the skills and knowledge of	functional and appealing	Evaluate existing products		brief, design criteria, make,
under DT on Staff	sewing developed as part of	products that are fit for	to determine which designs	Experience of making and	evaluate, user, purpose,
Resources)	the Puppet making project in Spring 2 Y2.	purpose. • Generate, develop, model	are the most effective.	using simple pattern pieces.	function, needle, thread, cotton, fabric, glue, sewing,
(You must complete the 'I		and communicate their	Judge the suitability of the	<u>Designing</u>	
am a technologist' proforma	Key learning:	ideas through discussion,	stockings for their	Design a functional and	
at the end of the unit of	Function - relates to how	annotated sketches,	intended users and	appealing product for a	
work - see DT on staff	suited it is to its purpose.	cross-sectional and	purposes.	chosen user and purpose	
resources)	Size, joins and fabric can	exploded diagrams,		based on simple design	
	affect this.	prototypes, pattern	Investigate fabrics to	criteria.	
	Vigual appeal hour	pieces and computer-	determine which is best for	Generate, develop, model	
	Visual appeal - how attractive and eye-catching	aided design.	the purpose of the product they are creating.	and communicate their	
	it is. Colour, decoration and	Make	They are creating.	ideas as appropriate	
	fabric can affect this.	 Select from and use a 	Demonstrate the correct	through talking, drawing,	
	, as its can appear into.	wider range of tools and	use of appropriate tools to	templates, mock-ups and	
	How to do back stitch and	equipment to perform	mark out, tape or pin the	information and	
	zig-zag stitch.	practical tasks e.g.	fabric to the templates or	communication technology.	
		,	paper patterns and cut out		

Use pane	l pattern to cut	cutting, joining and	the relevant fabric pieces	<u>Making</u>	
out mater	rial. f	finishing	for the product.	Select from and use a	
	• 5	Select from and use a		range of tools and	
	v	wider range of materials	Develop skills of threading	equipment to perform	
	C	and components, including	needles and joining textiles	practical tasks such as	
	t	textiles.	using a range of stitches.	marking out, cutting, joining	
			This activity must build	and finishing.	
	Ev	<u>valuate</u>	upon children's earlier		
	• 1	Investigate and analyse a	experiences of stitches e.g.	Select from and use	
	r	range of existing	improving appearance and	textiles according to their	
	F	products	consistency of stitches and	characteristics.	
	• E	Evaluate their ideas and	introducing new stitches.		
	F	products against their		<u>Evaluating</u>	
		own design criteria and	Develop skills of sewing	Explore and evaluate a	
	0	consider the views of	textiles by joining right	range of existing textile	
		others to improve their	side together and making	products relevant to the	
	· ·	work	seams	project being undertaken.	
		Understand how key			
	e	events and individuals in	Demonstrate examples of	Evaluate their ideas	
		DT have helped shape the	finishing techniques for	throughout and their final	
	V	world.	children to practise in	products against original	
			guided groups e.g. sewing	design criteria.	
		echnical Knowledge	buttons, 3-D fabric paint,		
	The state of the s	pply their understanding	gluing sequins, printing.	Technical knowledge and	
		f how to strengthen,		<u>understanding</u>	
		tiffen and reinforce more	Design, make and evaluate	Understand how simple 3-D	
	col	omplex structure	Develop a design brief	textile products are made,	
				using a template to create	
			Use annotated sketches	two identical shapes.	
			and prototypes to develop,		
			model and communicate	Understand how to join	
			their ideas for the product.	fabrics using different	
				techniques e.g. running	
			Identify the main stages of	stitch, glue, over stitch,	
			making and the appropriate	stapling.	
			tools and skills learnt		
			through focused tasks	Explore different finishing	
				techniques e.g. using	
				painting, fabric crayons,	

			Produce step-by-step plans,	stitching, sequins, buttons	
			lists of tools equipment,	and ribbons.	
			fabrics and components		
			needed.	Know and use technical	
				vocabulary relevant to the	
			Evaluate throughout and	project.	
			the final products against		
			the intended purpose and		
			with the intended user,		
			drawing on the design		
			criteria previously agreed.		
Spring 1 - 1 week	Design, make and evaluate a	<u>Design</u>	Investigate and evaluate:	Prior learning	texture, taste, sweet, sour,
	seasonal food meal.	Use research and develop	Investigate a range of food	Know some ways to prepare	hot, spicy, appearance,
Seasonal Food		design criteria to inform	products e.g. the content	ingredients safely and	smell, preference, greasy,
	There are opportunities to	the design of innovative,	of their lunchboxes over a	hygienically.	moist, cook, fresh, savoury
(See Plan Bee resources	make at least one of the	functional and appealing	week, a selection of foods		hygienic, edible, grown,
under DT on Staff	following: fairy cakes, fruit	products that are fit for	provided for them, food	Have some basic knowledge	reared, caught, frozen,
Resources)	tart, stuffed peppers,	purpose.	from a visit to a local shop	and understanding about	tinned, processed, seasonal,
	meatballs, jacket potato	• Generate, develop, model	·	healthy eating and The	harvested healthy/varied
(You must complete the 'I	with tune mayo, prawn mayo	and communicate their	Carry out sensory	Eatwell Guide.	diet planning, design
am a technologist' proforma	or egg mayo filling.	ideas through discussion,	evaluations on the contents		criteria, purpose, user,
at the end of the unit of	Different groups could	annotated sketches,	of the food from e.g. a	Have used some equipment	annotated sketch, sensory
work - see DT on staff	make and share.	cross-sectional and	variety of bought food	and utensils and prepared	evaluations
resources)		exploded diagrams,	products such as a range of	and combined ingredients	
	This project builds upon	prototypes, pattern	wraps or sandwiches.	to make a product.	
	the skills and knowledge of	pieces and computer-	·	·	
	food technology developed	aided design.	Record results, for example	Designing	
	as part of the Eat More	_	using a table	Generate and clarify ideas	
	Fruit and Veg project in	<u>Make</u>		through discussion with	
	Spring 1 Y1.	Select from and use a	Find out how a variety of	peers and adults to develop	
		wider range of tools and	ingredients used in	design criteria including	
	Key learning:	equipment to perform	products are grown and	appearance, taste, texture	
	Seasonal food is food that	practical tasks e.g.	harvested, reared, caught	and aroma for an appealing	
	is readily available at	cutting,	and processed	product for a particular	
	certain times of the year in	Select from and use a		user and purpose.	
	your area.	wider range of materials	<u>Focused Tasks</u>		
		and components, including	Select and use a range of	Use annotated sketches	
	Food can be grown out of	ingredients	utensils and use a range of	and appropriate information	
	season in greenhouses.		techniques as appropriate	and communication	

Food that is not in season in Britain can be grown in other countries.

Most fruits are harvested during summer or the start of autumn.

Vegetables don't grow on trees. They usually grow on or in the ground.

Meat forms an important part of some people's diets.

Lots of the fish we eat are caught at sea around Britain.

Fresh water fish come from the lakes, rivers and streams around Britain.

Evaluate

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in DT have helped shape the world.

Cooking and Nutrition

- Understand and apply the principles of a healthy and varied diet
- Prepare and cook a variety of savoury dishes using a range of cooking techniques
- Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking.

Make a sandwich

Basic food hygiene practices when handling food including the importance of following instructions to control risk

<u>Design, make and evaluate</u> Develop and agree on design criteria

Generate a range of ideas encouraging realistic responses.

Discussion, annotated sketches to develop and communicate ideas

Evaluate as the assignment proceeds and the final product against the intended purpose and user, reflecting on the design criteria previously agreed.

Consider what others think of the product when considering how the work might be improved.

technology, such as webbased recipes, to develop and communicate ideas.

Making

Plan the main stages of a recipe, listing ingredients, utensils and equipment.

Select and use appropriate utensils and equipment to prepare and combine ingredients.

Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.

Evaluating

Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.

Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.

Technical knowledge and understanding
Know how to use appropriate equipment and

Spring 2				utensils to prepare and combine food. Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Know and use relevant technical and sensory vocabulary appropriately	
Summer 1					
Summer 2					
YEAR 4	5 .: 1	<i>y</i>	ctill (D	E .: 11/4 1	
4 2 1	Rationale	Key content from NC	Skills/Processes	Essential Knowledge	Vocabulary
Autumn 1 - 2 weeks	Design, make and evaluate a	<u>Design</u>	Investigate and evaluate:	Prior learning	series circuit, fault,
Light Up Signs	light up sign which can be coded to work at specific times.	 Use research and develop design criteria to inform the design of innovative, functional and appealing 	Discuss, investigate and, where practical, disassemble different examples of relevant	Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.	connection, toggle switch, push-to-make switch, push- to-break switch, battery, battery holder, bulb, bulb
(See Plan Bee resources	This project builds upon	products that are fit for	battery-powered products,		holder, wire, insulator,
under DT on Staff	the skills and knowledge of	purpose.	including those which are	Cut and joined a variety of	conductor, crocodile clip
Resources)	making a box construction	• Generate, develop, model	commercially available	construction materials,	control, program, system,
A/	in Y1 (Shelters toy car	and communicate their	T	such as wood, card, plastic,	input device, output device
(You must complete the 'I	garage) and introduces	ideas through discussion,	Investigate examples of	reclaimed materials and	user, purpose, function,
am a technologist' proforma	them to understanding and	annotated sketches,	switches, including those	glue.	prototype, design criteria,
at the end of the unit of	knowledge of electrical	cross-sectional and	which are commercially	Dagianina	innovative, appealing, design
work - see DT on staff	systems in their products.	exploded diagrams,	available, which work in	Designing Gather information about	brief
resources)	Kay laamina:	prototypes, pattern pieces and computer-	different ways e.g. push- to-make, push-to-break,	needs and wants, and	
	Key learning:	•	•	·	
		aided design.	toggle switch.	develop design criteria to	

Signs give information, attract attention, give directions and advertise.

Many electrical signs have one bulb in an electrical circuit.

Electrical circuits need a complete closed loop to work.

Some circuits have resistors to keep them safe as they reduce the flow of electricity.

Incandescent bulbs have a small metal filament that glows brightly when electricity flows through it.

Most modern bulbs are LEDS as they are cheap and use very little electricity.

Electricity flows in one direction.

Twisting and joining wires together as crocodile clips are for temporary joins.

Microcontrollers are small electronic components that are programmed on a computer.

Make

- Select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, joining and finishing
- Select from and use a wider range of materials and components, including construction materials

Evaluate

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in DT have helped shape the world.

Technical Knowledge
Understand and use
electrical systems in their
products - series circuits,
incorporating switches,
bulbs, buzzers and motors.

The dangers of mains electricity.

Focused Tasks

Make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers.

Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers.

Find a fault in a simple circuit and correct it

Use a simple computer control program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers

Make a variety of switches by using simple classroom materials e.g. card, corrugated plastic, aluminium foil, paper fasteners and paper clips.

Make switches that operate in different ways e.g. when you press them, when you turn them, when inform the design of products that are fit for purpose, aimed at particular individuals or groups.

Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

Making

Order the main stages of making.

Select from and use tools and equipment to cut, shape, join and finish with some accuracy.

Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

Evaluating

Investigate and analyse a range of existing battery-powered products.

Evaluate their ideas and products against their own design criteria and identify

	Code blocks can be used in	you push them from side to	the strengths and areas for
	coding software such as	side.	improvement in their work.
	'Scratch' to program and		
	control LEDs.	Test their switches in a	Technical knowledge and
		simple series circuit.	understanding
			Understand and use
		Teach how to avoid making	electrical systems in their
		short circuits.	products, such as series
			circuits incorporating
		Design, make and evaluate	switches, bulbs and
		Develop a design brief	buzzers.
		Generate a range of ideas	Apply their understanding
			of computing to program
		Agree on design criteria	and control their products.
		that can be used to guide	
		the development and	Know and use technical
		evaluation of the children's	vocabulary relevant to the
		products, including safety	project.
		features.	
		Use annotated sketches,	
		cross-sectional and	
		exploded diagrams, as	
		appropriate, to develop, model and communicate	
		their ideas.	
		their ideas.	
		Consider the main stages in	
		making and testing before	
		assembling high quality	
		products.	
		products.	
		Evaluate throughout and	
		the final products against	
		the intended purpose and	
		with the intended user,	
		drawing on the design	
		criteria previously agreed.	
L	1		<u>l</u>

Autumn 2					
Spring 1 - 1 week	Design, make and evaluate a	<u>Design</u>	Investigate and evaluate:	Prior learning	components, fixing,
	pop-up rainforest animal	 Use research and develop 	Investigate, analyse and	Explored simple	attaching, tubing, syringe,
Pneumatics Pop Up	for a Y2 child to	design criteria to inform	evaluate familiar objects	mechanisms, such as sliders	plunger, split pin, paper
Rainforest Animals	demonstrate and share in	the design of innovative,	that use air to make them	and levers, and simple	fastener pneumatic system,
	school	functional and appealing	work e.g. bicycle pump,	structures.	input movement, process,
(See DATA resources		products that are fit for	balloon, inflatable swimming		output movement, control,
under DT - 2021`-22	New Learning:	purpose.	aids, foot pump for	Learnt how materials can	compression, pressure,
Planning, Subjects))	Use annotated sketches.	• Generate, develop, model	inflating an air bed.	be joined to allow	inflate, deflate, pump, seal,
		and communicate their	_	movement.	air-tight linear, rotary,
(You must complete the 'I	Pneumatics can be used to	ideas through discussion,	Construct a simple		oscillating, reciprocating
am a technologist' proforma	operate levers.	annotated sketches,	pneumatic system by joining	Joined and combined	user, purpose, function,
at the end of the unit of		cross-sectional and	a balloon to 5mm tubing and	materials using simple tools	prototype, design criteria,
work - see DT on staff		exploded diagrams,	then to a washing-up liquid	and techniques.	innovative, appealing, design
resources)		prototypes, pattern	bottle		brief, research, evaluate,
		pieces and computer-		Designing	ideas, constraints,
		aided design.	Demonstrate lifting an	Generate realistic and	investigate
		_	object to think about ways	appropriate ideas and their	_
		<u>Make</u>	in which this might be used	own design criteria through	
		 Select from and use a 	in a product.	discussion, focusing on the	
		wider range of tools and		needs of the user.	
		equipment to perform	Demonstrate a range of		
		practical tasks e.g.	pneumatic mechanisms	Use annotated sketches	
		cutting, joining and	using prepared teaching	and prototypes to develop,	
		finishing	aids including two syringes	model and communicate	
		 Select from and use a 	joined by plastic tubing;	ideas.	
		wider range of materials	three syringes connected		
		and components, including	using a T-connector and	<u>Making</u>	
		construction materials	using different sized	Order the main stages of	
			syringes	making.	
		<u>Evaluate</u>			
		 Investigate and analyse a 	Focused Tasks	Select from and use	
		range of existing	Assemble the systems	appropriate tools with some	
		products	using syringes, tubing,	accuracy to cut and join	
		 Evaluate their ideas and 	balloons and plastic bottles.	materials and components	
		products against their		such as tubing, syringes and	
		own design criteria and		balloons.	
		consider the views of			

	others to improve their	Introduce ways in which	Select from and use
	work	pneumatic systems can be	finishing techniques
	Understand how key	used to operate levers.	suitable for the product
	events and individuals in	•	they are creating.
	DT have helped shape the	Correct and accurate use	·
	world.	of measuring, marking out,	Evaluating
		cutting, joining and	Investigate and analyse
	Technical Knowledge	finishing skills and	books, videos and products
	Understand and use	techniques	with pneumatic mechanisms.
	mechanical systems in their		
	products - pneumatics.	Design, make and evaluate	Evaluate their own
		Develop a design brief	products and ideas against
			criteria and user needs, as
		Generate a range of ideas	they design and make.
		Agree on design criteria	Technical knowledge and
			understanding
		Use annotated sketches	Understand and use
		and prototypes, to develop,	pneumatic mechanisms.
		model and communicate	
		their ideas.	Know and use technical
			vocabulary relevant to the
		Consider the main stages in	project.
		making before assembling.	
		Contrate the Contraction	
		Evaluate the final products	
		against the intended	
		purpose and with the	
		intended user, where safe and practical, drawing on	
		the design criteria	
		previously agreed.	
		pi eviousiy ugireeu.	
Spring 2			
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	<u> </u>		

Summer 1					
Summer 2 - 1 week	To reflect on the impacts	<u>Design</u>	Investigate and evaluate:	<u>Prior learning</u> Constructed	Research, facts, messages,
	that inventions have had on	Use research and develop	Investigate, analyse and	a simple series electrical	streaming, videos, blogging
British Inventors	our lives.	design criteria to inform	evaluate familiar objects	circuit in science, using	reinforce, concrete,
		the design of innovative,		bulbs, switches and	
(See Plan Bee resources	This project enables the	functional and appealing	Design, make and evaluate	buzzers.	
under DT on Staff	children to reflect on the	products that are fit for	Develop a design brief		
Resources)	impact that inventions have	purpose.		Cut and joined a variety of	
	had on our lives	• Generate, develop, model	Generate a range of ideas	construction materials,	
(You must complete the 'I		and communicate their		such as wood, card, plastic,	
am a technologist' proforma		ideas through discussion,	Agree on design criteria	reclaimed materials and	
at the end of the unit of		annotated sketches,		glue.	
work - see DT on staff	New Learning:	cross-sectional and	Use annotated sketches		
resources)	The internet is a huge	exploded diagrams,	and prototypes, to develop,	<u>Designing</u>	
	network of computers	prototypes, pattern	model and communicate	Gather information about	
	linked together, all over	pieces and computer-	their ideas.	needs and wants, and	
	the world.	aided design.		develop design criteria to	
			Consider the main stages in	inform the design of	
	The World Wide Web runs	<u>Make</u>	making before assembling.	products that are fit for	
	on the internet. The WWW	 Select from and use a 		purpose, aimed at	
	is the webpages and	wider range of tools and	Evaluate the final products	particular individuals or	
	content we look at.	equipment to perform	against the intended	groups.	
		practical tasks e.g.	purpose and with the		
	Concrete is very versatile.	cutting, joining and	intended user, where safe	Generate, develop, model	
	It is strong and can be	finishing	and practical, drawing on	and communicate realistic	
	shaped and moulded.	 Select from and use a 	the design criteria	ideas through discussion	
		wider range of materials	previously agreed.	and, as appropriate,	
	Things can be reinforced	and components, including		annotated sketches, cross-	
	by adding materials to	construction materials		sectional and exploded	
	support them, or			diagrams.	
	strengthen them, or by	<u>Evaluate</u>			
	layering materials to be	• Investigate and analyse a		<u>Making</u>	
	stronger.	range of existing		Order the main stages of	
		products		making.	
		Evaluate their ideas and			
		products against their		Select from and use tools	
		own design criteria and		and equipment to cut,	
		consider the views of			

Allowa Actions and Allots	alone defining of Contal outside
others to improve their	shape, join and finish with
work	some accuracy.
• <u>Understand how key</u>	
events and individuals in	Select from and use
DT have helped shape	materials and components,
the world.	including construction
	materials and electrical
	components according to
	their functional properties
	and aesthetic qualities.
	·
	Evaluating
	Investigate and analyse a
	range of existing battery-
	powered products.
	Evaluate their ideas and
	products against their own
	design criteria and identify
	the strengths and areas for
	improvement in their work.
	improvement in their work.
	Technical knowledge and
	understanding
	Understand and use
	electrical systems in their
	products, such as series
	circuits incorporating
	switches, bulbs and
	buzzers.
	Apply their understanding
	of computing to program
	and control their products.
	Know and use technical
	vocabulary relevant to the
	project
<u> </u>	1 v

YEAR 5					
	Rationale	Key content from NC	Skills/Processes	Essential Knowledge	Vocabulary
Autumn 1 - 2 weeks	Design, make and evaluate a	<u>Design</u>	Investigate and evaluate:	<u>Prior learning</u>	frame structure, stiffen,
	model suspension bridge	Use research and develop	Investigate and make	Experience of using	strengthen, reinforce,
Building Bridges	supporting a smooth deck	design criteria to inform	annotated drawings of a	measuring, marking out,	triangulation, stability,
	which a toy car can roll	the design of innovative,	range of portable and	cutting, joining, shaping and	shape, join, temporary,
(See Plan Bee resources	across.	functional and appealing	permanent frame	finishing techniques with	permanent design brief,
under DT on Staff		products that are fit for	structures, e.g. tents, bus	construction materials.	design specification,
Resources)	This project builds upon	purpose.	shelters, umbrellas.		prototype, annotated
	the skills and knowledge of	 Generate, develop, model 		Basic understanding of	sketch, purpose, user,
(You must complete the 'I	making various types of	and communicate their	Research key events and	what structures are and	innovation, research,
am a technologist' proforma	bridges understanding	ideas through discussion,	individuals related to their	how they can be made	functional, beam, pillar,
at the end of the unit of	compression forces and	annotated sketches,	study of frame structures	stronger, stiffer and more	compression, suspension,
work - see DT on staff	tension.	cross-sectional and	e.g. Stephen Sauvestre – a	stable.	truss, gravity, downward
resources)		exploded diagrams,	designer of the Eiffel		force, arch, technical
	New Learning:	prototypes, pattern	Tower; Thomas Farnolls	Designing	drawing,
	The flat surface of a	pieces and computer-	Pritchard - designer of the	Carry out research into	
	bridge is called the deck.	aided design.	Iron Bridge	user needs and existing	
				products, using surveys,	
	Side sections of a bridge	<u>Make</u>	Focused Tasks	interviews, questionnaires	
	are called parapets.	Select from and use a	Use a construction kit to	and web-based resources.	
		wider range of tools and	build various bridge types.		
	Pillars allow bridge builders	equipment to perform		Develop a simple design	
	to span even wider gaps.	practical tasks e.g.	Compare the strength of	specification to guide the	
		cutting, joining and	square frameworks with	development of their ideas	
	A truss is made up of	finishing	triangular frameworks with	and products, taking	
	several beams connected	• Select from and use a	Meccano or K'nex.	account of constraints	
	together in different ways.	wider range of materials		including time, resources	
		and components, including	Demonstrate how paper	and cost.	
	Gravity is a downward	construction materials	tubes can be made from		
	force acting on bridges		rolling sheets of newspaper	Generate, develop and	
	generating compression	Evaluate	diagonally around pieces of	model innovative ideas,	
	forces.	• Investigate and analyse a	e.g. dowel. Use these tubes	through discussion,	
		range of existing	and masking tape or paper	prototypes and annotated	
	Stone breaks easily under	products	straws with pipe cleaners	sketches.	
	tension, but can withstand	• Evaluate their ideas and	to build 3-D frameworks		
	huge compression forces.	products against their	such as cubes, cuboids and	<u>Making</u>	
		own design criteria and	pyramids	Formulate a clear plan,	
		consider the views of		including a step-by-step list	

Arch bridges are designed	others to improve their	Accurate use of tools and	of what needs to be done
to spread out the	work	equipment	and lists of resources to be
compression forces.	 Understand how key 	equipment	used.
compression forces.	events and individuals in	Demonstrate skills and	useu.
	DT have helped shape the	techniques for accurately	Competently select from
	world.	joining framework	and use appropriate tools
	world.	•	• • • • • • • • • • • • • • • • • • • •
	Tarket de Kondada	materials together e.g.	to accurately measure,
	Technical Knowledge	paper straws, square	mark out, cut, shape and
	Apply their understanding	sectioned wood.	join construction materials
	of how to strengthen,		to make frameworks.
	stiffen and reinforce	Design, make and evaluate	
	more complex structure	Discuss the brief of	Use finishing and
		designing and making a	decorative techniques
		small-scale bridge.	suitable for the product
			they are designing and
		Generate innovative ideas,	making.
		drawing on their research.	
			<u>Evaluating</u>
		Develop a simple design	Investigate and evaluate a
		specification to guide their	range of existing frame
		thinking.	structures.
		Produce a detailed, step-	Critically evaluate their
		by-step plan, listing tools	products against their
		and materials.	design specification,
			intended user and purpose,
		Sketches should be	identifying strengths and
		annotated with notes to	areas for development, and
		help develop and	carrying out appropriate
		communicate their ideas.	tests.
		Model their ideas first	Research key events and
		using materials such as	individuals relevant to
		paper, card and paper straw	frame structures.
		1, 2	
		Make product with	Technical knowledge and
		accuracy.	understanding Understand
		·- /-	how to strengthen, stiffen
			on ongmon, on point

			Evaluate their work and	and reinforce 3-D	
			their completed product,	frameworks.	
			drawing on their design		
			specification, and thinking	Know and use technical	
			about the intended purpose	vocabulary relevant to the	
			and user.	project.	
Autumn 2					
Spring 1 - 1 week (& cooking	Design, make and evaluate a	Design	Investigate and evaluate:	Prior learning	ingredients, yeast, dough,
time across the half term)	burger for Y5 to	Use research and develop	Use first hand and	Have knowledge and	bran, flour, wholemeal,
ŕ	demonstrate changes in	design criteria to inform	secondary sources to carry	understanding about food	unleavened, baking soda,
Burgers	materials.	the design of innovative,	out relevant research into	hygiene, nutrition, healthy	spice, herbs fat, sugar,
		functional and appealing	existing products to include	eating and a varied diet.	carbohydrate, protein,
(See Plan Bee resources	This project builds upon	products that are fit for	personal/cultural		vitamins, nutrients,
under DT on Staff	the skills and knowledge of	purpose.	preferences, ensuring a	Be able to use appropriate	nutrition, healthy, varied,
Resources)	food technology developed	• Generate, develop, model	healthy diet, meeting	equipment and utensils, and	gluten, dairy, allergy,
,	as part of the Eat More	and communicate their	dietary needs and the	apply a range of techniques	intolerance, savoury,
(You must complete the 'I	Fruit and Veg project in	ideas through discussion,	availability of locally	for measuring out,	source, seasonality utensils,
am a technologist' proforma	Spring 1 Y1 and Seasonal	annotated sketches,	sourced/seasonal/organic	preparing and combining	combine, fold, knead, stir,
at the end of the unit of	Food in Spring 1 Y3.	cross-sectional and	ingredients.	ingredients.	pour, mix, rubbing in, whisk,
work - see DT on staff	1 3	exploded diagrams,			beat, roll out, shape,
resources)	The children should have	prototypes, pattern	Include a visit to a local	Designing	sprinkle, crumble design
,	the opportunity to try	pieces and computer-	bakery, farm, farm shop or	Generate innovative ideas	specification, innovative,
	different sauces, salads	aided design.	supermarket	through research and	research, evaluate, design
	and bread rolls to go with	3	•	discussion with peers and	brief, patties, grill, mince,
	their burger.	Make	Carry out sensory	adults to develop a design	rolls, bread, gluten free,
	3	Select from and use a	evaluations of a variety of	brief and criteria for a	
	New Learning:	wider range of tools and	existing food products and	design specification.	
	Nutrition labels tell us	equipment to perform	ingredients relating to the		
	what the food contains and	practical tasks e.g.	project. The ingredients	Explore a range of initial	
	how many calories it has.	cutting, joining and	could include those that	ideas, and make design	
	•	finishing	could be added to a basic	decisions to develop a final	
	Nutrition labels tell us how	• Select from and use a	recipe such as herbs,	product linked to user and	
	many fats, proteins and	wider range of materials	spices, vegetables or	purpose.	
	carbohydrates there are in	and components, including	cheese		
	the food we eat.	ingredients		Use words, annotated	
		_	Present results in e.g.	sketches and information	
	Nutrition labels help us to	<u>Evaluate</u>	tables/graphs/charts and	and communication	
	make choices about the		by using evaluative writing.	technology as appropriate	
	food we eat.				

	Investigate and analyse a	Research key chefs and	to develop and communicate
Calories are energy that	range of existing	how they have promoted	ideas.
fuel our body and they	products	seasonality, local produce	
come from fats, proteins	 Evaluate their ideas and 	and healthy eating.	Making
and carbohydrates.	products against their	,	Write a step-by-step
,	own design criteria and	Focused Tasks	recipe, including a list of
	consider the views of	Demonstrate how to	ingredients, equipment and
	others to improve their	measure out, cut, shape and	utensils
	work	combine e.g. mix, knead	
	 Understand how key 		Select and use appropriate
	events and individuals in	Demonstrate how to use	utensils and equipment
	DT have helped shape the	appropriate utensils and	accurately to measure and
	world.	equipment safely and	combine appropriate
		hygienically	ingredients.
	Cooking and Nutrition		
	 Understand and apply the 	Ask questions about which	Make, decorate and
	principles of a healthy	ingredients could be	present the food product
	and varied diet	changed or added in a basic	appropriately for the
	 Prepare and cook a 	recipe such as types of	intended user and purpose.
	variety of savoury dishes	flour, seeds, garlic,	
	using a range of cooking	vegetables. Consider	<u>Evaluating</u>
	techniques	texture, taste, appearance	Carry out sensory
	 Understand seasonality, 	and smell.	evaluations of a range of
	and know where and how a		relevant products and
	variety of ingredients are	Explore making different	ingredients. Record the
	grown, reared, caught and	shapes to change the	evaluations using e.g.
	processed.	appearance of the food	tables/graphs/charts such
		product	as star diagrams.
		Design, make and evaluate	Evaluate the final product
		Develop a design brief	with reference back to the
			design brief and design
		Develop design criteria	specification, considering
		relating to nutrition and	the views of others when
		healthy eating	identifying improvements.
		Ganarata a nanco of ideas	Understand how key chafe
		Generate a range of ideas	Understand how key chefs
			have influenced eating

			Agree on design criteria	habits to promote varied	
			that can be used to guide	and healthy diets.	
			the development and	and nearing diets.	
			evaluation of the product.	Technical knowledge and	
			evaluation of the product.	understanding	
			Use annotated sketches,	Know how to use utensils	
			discussion and information	and equipment including	
			and communication	heat sources to prepare	
			technology if appropriate,	and cook food.	
			to develop and communicate	and cook food.	
			their ideas.	Understand about	
				seasonality in relation to	
			Record the steps,	food products and the	
			equipment, utensils and	source of different food	
			ingredients for making the	products.	
			food	•	
				Know and use relevant	
			Evaluate the work as it	technical and sensory	
			progresses and the final	vocabulary.	
			product against the	,	
			intended purpose and user		
			reflecting on the design		
			specification previously		
			agreed.		
Spring 2					
Summer 1					
Summer 2					
YEAR 6					
	Rationale	Key content from NC	Skills/Processes	Essential Knowledge	Vocabulary
Autumn 1 - 2 weeks	Design, make and evaluate a	<u>Design</u>	Investigate and evaluate:	<u>Prior learning</u>	Quartz, computer,
	light up sign which can be	Use research and develop	Discuss a range of relevant	Initial experience of using	microchip, engineer,
<u>Programming Pioneers</u>	coded to work at specific	design criteria to inform	products (such as	computer control software	debugging,
	times.	the design of innovative,	nightlights, garden lights,	and an interface box, a	reed switch, toggle switch,
(See Plan Bee resources		functional and appealing	alarm systems, security	standalone box or	push-to-make switch, push-
under DT on Staff	This project builds upon	products that are fit for	lighting, electronic	microcontroller, e.g.	to-break switch, light
Resources)	the skills and knowledge of	purpose.	moneyboxes) that respond	Crumble.	dependent resistor (LDR),
	electrical systems in	• Generate, develop, model	to changes in the		tilt switch light emitting
(You must complete the 'I	products in Autumn 1 Year	and communicate their	environment using a	Some experience of writing	diode (LED), bulb, bulb
am a technologist' proforma	4 'Light Up Signs'.	ideas through discussion,	computer control program	and modifying a program to	holder, battery, battery

at the end of the unit of work - see DT on staff resources)

Key learning:

Memory chips store data by setting thousands, millions or billions of switches (called transistors) in on or off positions.

The changes in the level of electrical current flowing through the open or closed switches can be read and interpreted.

Microcontrollers are small, inexpensive computer systems on chips.

Debugging finding and fixing faults in a system.

annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computeraided design.

Make

- Select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, joining and finishing
- Select from and use a wider range of materials and components, including ingredients

Evaluate

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in DT have helped shape the world.

e.g. Why is a computer control program used to operate the products? What are the advantages of using computer control? What input devices, e.g. switches, and output devices, e.g. bulbs and buzzers, have been used? Who have the products been designed for and for what purpose?

Investigate sensors such as light dependent resistors (LDRs) and a range of switches such as push-to make, push-to-break, toggle, micro and reed switches. To gain an understanding of how they are operated by the user and how they work, ask the children to use each component to control a bulb in a simple circuit. Remind children about the dangers of mains electricity.

Children could research famous inventors related to the project e.g. Thomas Edison – light bulb. Steve Jobs.

Focused Tasks
Through teacher
demonstration and
explanation, recap

make a light turn on or flash on and off.

Understanding of the essential characteristics of a series circuit and experience of creating a battery bowered, functional, electrical product.

Designing
Develop a design
specification for a
functional product that
responds automatically to
changes in the environment.

Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams

<u>Making</u>

Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.

Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.

holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit function, innovative, design specification, design brief, user, purpose

measuring, marking out, cutting and joining skills with construction materials that children will need to create their electrical product s. Using a model circuit, demonstrate and enable children to practise using different injunt and output devices. Allow them to practise methods for making secure electrical connections ag, using wire strippers, twist and tape connections, screew c		4
with construction materials that children will need to create their electrical products. Using a model circuit, demonstrate and enable children to protise using different input and out put devices. Allow them to practise embeds for making secure electrical connections e.g. using vire strippers, twist and connections, screw connections and control their products. Drawing on science understanding, ask the children how to avoid making short circuits, bright series circuit systems that could be used to control their products, including a simple series circuit where two output devices are controlled, a series circuit where a appropriate, parallel circuits where two output devices are controlled by one switch and, where appropriate, parallel circuits where two output devices are controlled by one switch and, where appropriate, parallel circuits where two output devices.		·
that children will need to create their electrical products. Using a model circuit, demonstrate and enable children to practise using different input and output devices. Allow them to practise methods for making secure electrical connections, screw connecting blocks. Remind children hav to avoid making short circuits. Drawing on science understanding, ask the children to explore a range of electrical systems that could be used to control their products, including a simple series circuit where a single output devices are controlled, a series circuit where we output devices are controlled, and series circuit where two output devices are controlled, including a simple series circuit where approprinte, parallel circuits where two output devices are controlled circuits where two output devices are controlled circuits where two output devices are controlled circuits where two output a control and control their products.		1 '
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devices are controlled		
	devices are controlled	

independently by two
separate switches.
Drawing on related
computing activities, ensure
that children can write and
modify computer control
programs that include
inputs, outputs and decision
making. Test out the
programs using electrical
components connected to
microcontrollers, interface
boxes or standalone boxes.
BOXES OF STANDARDING BOXES.
Design, make and evaluate
Communicate ideas through
annotated sketches,
pictorial representations of
electrical circuits or circuit
diagrams, including the
microcontroller, interface
box or standalone box to be
used. Drawings should
indicate the design
decisions made, including
the location of the
electrical components and
how they work as a system
with an input, process and
output. Reference should
be made to the control
program used and how it
will operate to control the
inputs and outputs.
inputs and outputs.
Produce detailed step-by-
step plans and lists of
tools, equipment and
10015, equipment unu

	intended user and purpose.	
	intended user and purpose.	
	system to demonstrate its effectiveness for the intended user and purpose	
	the original design specification. Test the	
	Critically evaluate throughout and the final product, comparing it to	
	changes in the environment.	
	control program to enable the product to work automatically in response to	
	from IEAs and FTs. Create and modify a computer	
	Make high quality products, applying knowledge, understanding and skills	
	appropriate, allocate tasks within a team.	

(You must complete the 'I am a technologist' proforma at the end of the unit of work - see DT on staff resources)

key stitches and ways to join fabrics.

Key Learning:

Products which are woven are called textiles.

Different textiles have different properties.

Most products made using textiles are joined using sewing.

Textiles an also be joined with fasteners, glue or riveting.

Applique is when a smaller piece of fabric is added to another.

Pattern pieces are drawings that are the exact shape and size as the sections of textiles to make a product.

Pattern pieces can be used again and again.

ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computeraided design.

Make

- Select from and use a wider range of tools and equipment to perform practical tasks e.g. cutting, joining and finishing
- Select from and use a wider range of materials and components, including textiles

Evaluate

- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- Understand how key events and individuals in DT have helped shape the world.

<u>Technical Knowledge</u>
Apply their understanding of how to strengthen,

Investigate work by designers and their impact on fabrics and products

Investigate and analyse how existing products have been constructed.

Disassemble a product and evaluate what the fabric shapes look like, how the parts have been joined, how the product has been strengthen and stiffened, what fastenings have been used and why.

Investigate properties of textiles through investigation e.g. exploring insulating properties, water resistance, wear and strength of textiles.

Focused Tasks

Develop skills of threading needles and joining textiles using a range of stitches

If available, use sewing machines to join fabric with close adult supervision.

Develop skills of sewing textiles by joining right side together and making seams. Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.

Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer aided design.

Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.

<u>Making</u>

Produce detailed lists of equipment and fabrics relevant to their tasks.

Formulate step-by-step plans and, if appropriate, allocate tasks within a team.

Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.

criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype, applique,

stiffen and reinforce more complex structure Investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening and learn how to start and finish off a row of stitches. Develop skills of 2-D paper pattern making using grid or tracing paper to create a 3-D mock-up of a chosen product. Teach how to pin a pattern on to fabric ensuring limited wastage, how to leave a seam allowance and different cutting techniques. Design, make and evaluate Studuating Investigate and analyse thetile products linked to their final product. Compare the final product to the original design specification. Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work. Technical knowledge and understanding
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Technical knowledge and
Design, make and evaluate understanding
Create a design brief A 3-D textile product can
be made from a
Generate ideas combination of accurately
made pattern pieces, fabric
Communicate ideas through shapes and different
detailed, annotated fabrics.
drawings from different
perspectives Fabrics can be
strengthened, stiffened
Drawings should indicate and reinforced where
design decisions made, the appropriate
methods of strengthening,
the type of fabrics to be
used and the types of
stitching that will be
incorporated.

Produce step-by-step plans
Make product
Use a range of decorating techniques to ensure a well- finished final product that matches the intended user
and purpose.
Critically evaluate the quality of the design, the manufacture, functionality,
innovation shown and fitness for intended user
and purpose, considering
others' opinions.
Communicate the evaluation in various forms e.g. writing
for a particular purpose,
giving a well-structured
oral evaluation, speaking
clearly and fluently.