

Roundswell Community Primary Academy



Design Technology Curriculum



Design Technology

INTENT

It is our intent for the DT element of our school curriculum to inspire pupils to use creativity and imagination to design and make products that will solve real and relevant problems within a variety of contexts, considering their own and other's needs, wants and values. They will explore a wide range of materials and processes to make things of quality that work and develop the importance of precision and working carefully.

By the end of year 6 at RCPA, children will have mastered a range of skills that will support their future development. These are:

To be good communicators – language will be modelled daily to encourage speaking and listening and understand that art and DT is another form of communication to those around them and how feelings can be portrayed in different mediums.

To be enthusiastic, lifelong learners with an interest in art and DT when they can visualise it in the world around them.

To understand how to keep themselves safe and be respectful in their communities by using art and DT to express their feelings in a way that is considerate to their different audiences.

to develop their strengths by being creative.

To be independent, resilient learners who enjoy challenges and can make link and connections into their learning.

The children will develop a broad range of subject knowledge with many cross curricular links such as maths, science, computing and art. Pupils will learn how to take risks and be more resourceful and innovative in their designs. Children will learn to critically evaluate products the use in order to inform their own designs and then evaluate their own work, thinking about how they can make changes and keep improving. When children leave RCPA, we expect them to have a sound understanding of the key skills and techniques required in D&T. They should be able to build simple structures, construct mechanisms, sew competently and cook a range of products. They should be competent designers, who are able to evaluate their own work and who are well-equipped to take part in the next stage of their education.

Design Technology Curriculum Overview

IMPLEMENTATION

At RCPA our design and technology curriculum is built around essential knowledge, understanding and key skills. These are broken into year group expectations and show clear continuity and progress. All teaching of design and technology follows the design, make and evaluate cycle. The design process should be relevant in context, to give meaning to learning. While making, children should be given choice and a range of tools to choose freely from. When evaluating, children should be able to evaluate their own products against a design criteria. Each of these steps should be rooted in technical knowledge and vocabulary.

The Design Technology National Curriculum and EYFS is planned for and covered in full within the EYFS, KS1 and KS2 school curriculum. Whilst the EYFS and National Curriculum forms the foundation of our curriculum, we make sure that children learn additional skills, knowledge and understanding and enhance our curriculum as and when necessary.

Delivery of design and technology projects with a clear structure. Each year group will undertake a variety of projects.

Delivery showing clear following of the design process where each project will follow: research, design, make and evaluate.

A range of skills will be taught ensuring that children are aware of health and safety issues related to the tasks undertaken.

Clear and appropriate cross curricular links to underpin learning in multi areas across the curriculum giving the children opportunities to learn life skills and apply skills to 'hands on' situations in a purposeful contexts.

Design Technology focused displays celebrating the outstanding three dimensional creations on display throughout the school. These displays celebrate exceptional practice and exemplify terminology and vocabulary used.

Independent learning: In design technology children may well be asked to solve problems and develop their learning independently. This allows the children to have ownership over their curriculum and lead their own learning in Design Technology.

Collaborative learning: In design and technology children may well be asked to work as part of a team learning to support and help one another towards a challenging, yet rewarding goal.

Design Technology Curriculum Overview

IMPACT

We encourage the children at Roundswell Community Primary Academy to enjoy and value the curriculum we deliver.

We will constantly ask the WHY behind their learning and not just the HOW.

At RCPA, the impact of quality first teaching in Design Technology fosters a love and enthusiasm for the subject.

Everything we do is with the child in mind, and strong relationships are built between pupils and staff which create an atmosphere for learning which is conducive to success.

- We measure the impact of our curriculum through the following methods:
- Summative assessment of pupil discussions about their learning
- Images of the children's practical learning
- Interviewing the pupils about their learning (pupil voice)
- Pupil's books are scrutinised and there is no opportunity for a dialogue between teachers to understand their class's work.
- Marking of work in books

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.

Design Technology Curriculum Overview

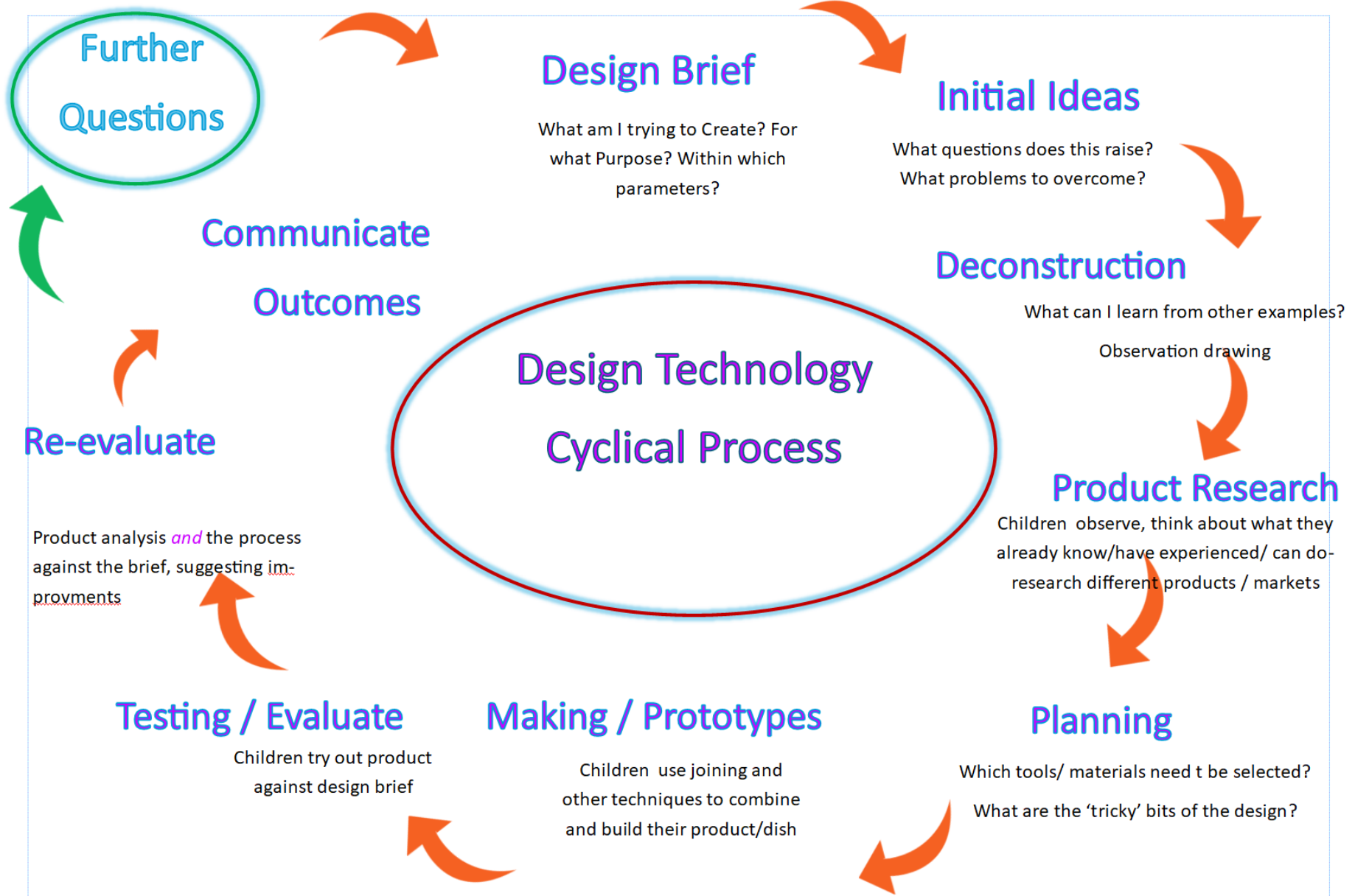
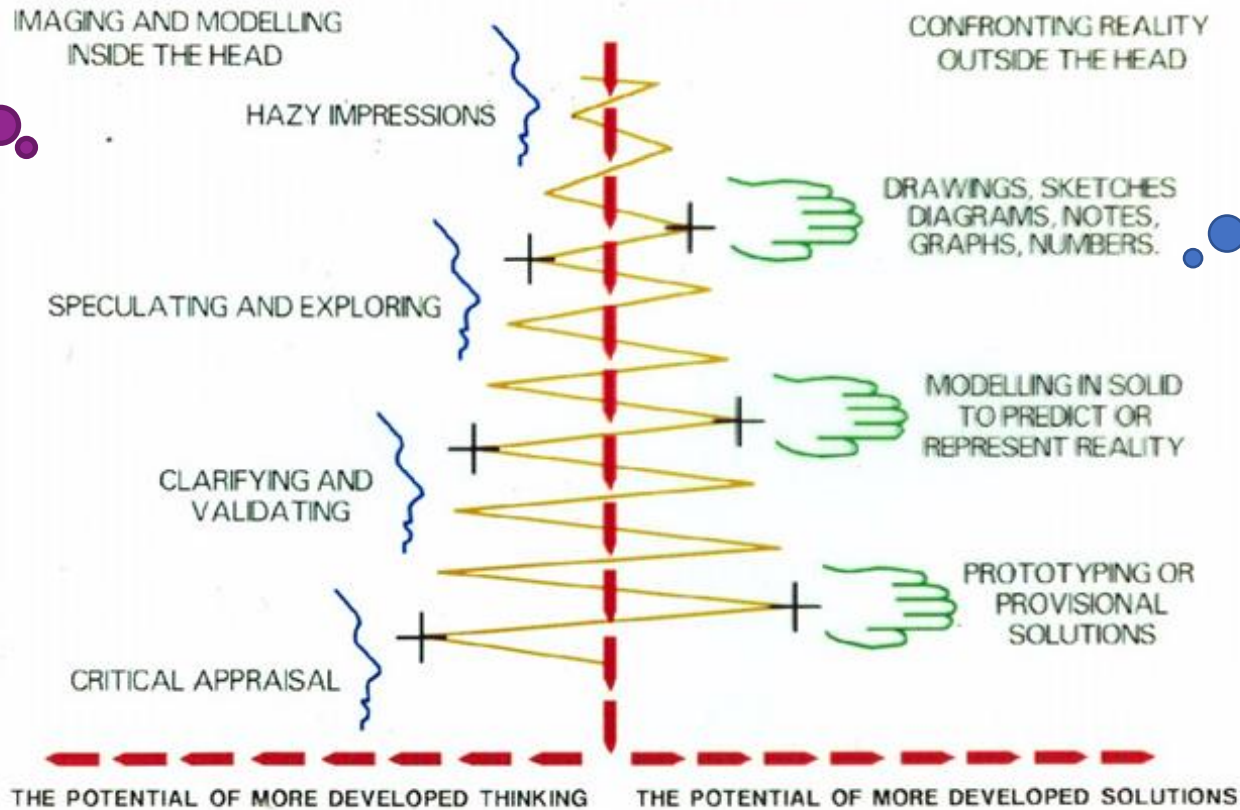


Figure 1. An iterative conceptual model to describe designing processes

THE INTERACTION OF MIND AND HAND A SCHEMATIC ILLUSTRATION



THINKING
(inside the
head...)

DOING (in the
real world...)

Design Technology Curriculum Overview

Conceptual Development

Six Key Concepts/ Principles Distinctive to DT	
User	Pupils should have a clear idea of who they are designing and making products for, considering their needs, wants, values, interests and preferences. The intended users could be themselves or others, an imaginary or story-based character, a client, a consumer or specific target group.
Purpose	Pupils should be able to clearly communicate the purpose of the products they are designing and making. Each product they create should be designed to perform one or more defined tasks. Pupils' products should be evaluated through use.
Functionality	Pupils should design and make products that work/function effectively in order to fulfil users' needs, wants and purposes
Design decisions	Pupils need opportunities to make their own design decisions. Making design decisions allows pupils to demonstrate their creative, technical and practical expertise, and draw on learning from other subjects. Through making design decisions pupils decide on the form their product will take, how their product will work, what task or tasks it will perform and who the product will be for.
Innovation	When designing and making, pupils need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed and are characterised by engaging open ended starting points for learning.
Authenticity	Pupils should design and make products that are believable, real and meaningful to themselves and others.

Design Technology Curriculum Overview

Design Technology							
Year group	Rec	1	2	3	4	5	6
Developing planning and communicating ideas	Represent their own ideas, thoughts and feelings	Draw on their own experience to help generate ideas	Generate ideas by drawing on their own and other people's experiences	Generate ideas for an item, considering its purpose and the user/s	Generate ideas, considering the purposes for which they are designing	Generate ideas through brainstorming and identify a purpose for their product	Communicate their ideas through detailed labelled drawings
	Think about uses and purposes for what they have learnt about materials and media	<p>Suggest ideas and explain what they are going to do</p> <p>Identify a target group for what they intend to design and make</p> <p>Model their ideas in card and paper</p> <p>Develop their design ideas applying findings from their earlier research</p>	<p>Develop their design ideas through discussion, observation, drawing and modelling</p> <p>Identify a purpose for what they intend to design and make</p> <p>Identify simple design criteria</p> <p>Make simple drawings and label parts</p>	<p>Identify a purpose and establish criteria for a successful product.</p> <p>Plan the order of their work before starting</p> <p>Explore, develop and communicate design proposals by modelling ideas</p> <p>Make drawings with labels when designing</p>	<p>Make labelled drawings from different views showing specific features</p> <p>Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail</p> <p>Evaluate products and identify criteria that can be used</p>	<p>Draw up a specification for their design</p> <p>Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail</p> <p>Use results of investigations, information sources, including ICT when</p>	<p>Develop a design specification</p> <p>Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways</p> <p>Plan the order of their work, choosing appropriate materials, tools and techniques</p>

Design Technology Curriculum Overview

					for their own designs	developing design ideas	
	Rec	1	2	3	4	5	6
Working with tools, equipment and components to make quality products	Talk about ideas and processes	Make their design using appropriate techniques	Begin to select tools and materials; use vocab' to name and describe them	Select tools and techniques for making their product	Select appropriate tools and techniques for making their product	Select appropriate materials, tools and techniques	Select appropriate tools, materials, components and techniques
	Follow instructions involving several ideas	With help measure, mark out, cut and shape a range of materials	Measure, cut and score with some accuracy	Measure, mark out, cut, score and assemble components with more accuracy	Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques	Measure and mark out accurately	Assemble components make working models
	Handle equipment and tools effectively	Use tools <i>eg scissors and a hole punch</i> safely	Use hand tools safely and appropriately	Work safely and accurately with a range of simple tools	Join and combine materials and components accurately in temporary and permanent ways	Use skills in using different tools and equipment safely and accurately	Use tools safely and accurately
	Know the importance of a healthy diet	Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape	Assemble, join and combine materials in order to make a product	Think about their ideas as they make progress and be willing change things if this helps them improve their work	Sew using a range of different stitches, weave and knit	Weigh and measure accurately (time, dry ingredients, liquids)	Construct products using permanent joining techniques
	Talk about ways to keep healthy and safe	Select and use appropriate	Cut, shape and join fabric to make a simple garment. Use basic sewing techniques	Measure, tape or pin, cut and	Measure, tape or pin, cut and join	Apply the rules for basic food hygiene and other safe practices <i>e.g. hazards relating</i>	Make modifications as they go along
	Be confident to try new activities						Pin, sew and stitch materials together create a product

Design Technology Curriculum Overview

	Use and explore a variety of materials, tools and techniques	fruit and vegetables, processes and tools Use basic food handling, hygienic practices and personal hygiene Use simple finishing techniques to improve the appearance of their product.	Follow safe procedures for food safety and hygiene Choose and use appropriate finishing techniques	join fabric with some accuracy Demonstrate hygienic food preparation and storage Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT	fabric with some accuracy Use simple graphical communication techniques	<i>to the use of ovens</i> Cut and join with accuracy to ensure a good-quality finish to the product	Achieve a quality product
	Rec	1	2	3	4	5	6
Evaluating processes and products	Discuss their designs. Images and products Represent their own ideas, thoughts and feelings	Evaluate their product by discussing how well it works in relation to the purpose Evaluate their products as they are	Evaluate against their design criteria Evaluate their products as they are developed, identifying strengths and possible	Evaluate their product against original design criteria <i>e.g. how well it meets its intended purpose</i> Disassemble and evaluate	Evaluate their work both during and at the end of the assignment Evaluate their products carrying out appropriate tests	Evaluate a product against the original design specification Evaluate it personally and seek evaluation from others	Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests

Design Technology Curriculum Overview

		<p>developed, identifying strengths and possible changes they might make</p> <p>Evaluate their product by asking questions about what they have made and how they have gone about it</p>	<p>changes they might make</p> <p>Talk about their ideas, saying what they like and dislike about them</p>	familiar products			<p>Record their evaluations using drawings with labels</p> <p>Evaluate against their original criteria and suggest ways that their product could be improved</p>
--	--	--	--	-------------------	--	--	--

Technical knowledge and understanding						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	<p>Freestanding structures</p> <ul style="list-style-type: none"> Explore how to make freestanding structures stronger, stiffer and more stable. 	<p>Freestanding structures</p> <ul style="list-style-type: none"> Know how to make freestanding structures stronger, stiffer and more stable. 	<p>Shell structures</p> <ul style="list-style-type: none"> Develop and use knowledge of how to construct strong, stiff shell structures. Develop and use knowledge of nets of cubes and 		<p>Frame structures</p> <ul style="list-style-type: none"> Understand how to strengthen, stiffen and reinforce 3-D frameworks. Know and use technical vocabulary relevant to the 	

Design Technology Curriculum Overview

	<ul style="list-style-type: none"> • Begin to use technical vocabulary relevant to the project. 	<ul style="list-style-type: none"> • Know and use technical vocabulary relevant to the project. 	<p>cuboids and, where appropriate, more complex 3D shapes.</p> <ul style="list-style-type: none"> • Know and use technical vocabulary relevant to the project. 		project.	
Mechanisms	<p>Sliders and leavers</p> <ul style="list-style-type: none"> • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Begin to use technical vocabulary relevant to the project. 	<p>Wheels and axels</p> <ul style="list-style-type: none"> • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project. 	<p>Levers and linkages</p> <ul style="list-style-type: none"> • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project. 	<p>Pneumatics</p> <ul style="list-style-type: none"> • Understand and use pneumatic mechanisms. • Know and use technical vocabulary relevant to the project. 	<p>Pulleys and gears</p> <ul style="list-style-type: none"> • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. • Know and use technical vocabulary relevant to the project. 	<p>Cams</p> <ul style="list-style-type: none"> • Understand that mechanical systems have an input, process and an output. • Understand how cams can be used to produce different types of movement and change the direction of movement. • Know and use technical vocabulary relevant to the project.

Design Technology Curriculum Overview

Food	<p>Preparing fruit and vegetables</p> <ul style="list-style-type: none"> • 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 <i>The eatwell plate</i>. • Begin to use technical and sensory vocabulary relevant to the project. 		<p>Healthy and varied diet</p> <ul style="list-style-type: none"> • Know how to use appropriate equipment and 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. • Know and use relevant technical and sensory vocabulary. 		<p>Celebrating culture and seasonality</p> <ul style="list-style-type: none"> • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary appropriately. 	
Textiles		<p>Templates and joining techniques</p> <ul style="list-style-type: none"> • Understand how simple 3-D textile products are made, using a template to 		<p>2D shape to 3D product</p> <ul style="list-style-type: none"> • Know how to strengthen, stiffen and reinforce existing fabrics. 		<p>Combining different fabric shapes</p> <ul style="list-style-type: none"> • A 3-D textile product can be made from a combination of

Design Technology Curriculum Overview

		<p>create two identical shapes.</p> <ul style="list-style-type: none"> • Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. • Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project. 		<ul style="list-style-type: none"> • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project. 		<p>accurately made pattern pieces, fabric shapes and different fabrics.</p> <ul style="list-style-type: none"> • Fabrics can be strengthened, stiffened and reinforced where appropriate.
Electrical systems				<p>Simple circuits and switches</p> <ul style="list-style-type: none"> • Understand and use electrical systems in their products, such as series circuits incorporating 		<p>More circuits and switches</p> <ul style="list-style-type: none"> • Understand and use electrical systems in their products. • Apply their understanding of computing to

Design Technology Curriculum Overview

				<p>switches, bulbs and buzzers.</p> <ul style="list-style-type: none">• Apply their understanding of computing to program and control their products.• Know and use technical vocabulary relevant to the project.		<p>program, monitor and control their products.</p> <ul style="list-style-type: none">• Know and use technical vocabulary relevant to the project.
--	--	--	--	--	--	--

Design Technology Curriculum Overview

Long Term Plan

DT is planned in half termly blocks. There are three units per year as DT alternates with Art.

	Autumn 2	Spring 2	Summer 2
Reception			
Year 1	Structures Freestanding structures Design, make and evaluate enclosures for zoo/farm animals to keep them safe.	Food Preparing Fruit and vegetables Design, make and evaluate a fruit or vegetable salad to share with friends and family at open afternoon.	Mechanisms Sliders and levers Design, make and evaluate a moving boat picture for other children to enjoy playing with.
Year 2	Textiles Templates and joining materials Design, make and evaluate a cape for a superhero as part of their costume.	Mechanisms Wheels and axles Design, make and evaluate a train/Victorian push/pull vehicle for themselves to play with.	Structures Freestanding structures Design, make and evaluate a shelter for themselves for survival in the rainforest.
Year 3	Mechanisms Levers and linkages Design, make and evaluate a levered greetings card for a friend to celebrate Christmas (or chosen alternative)	Structures Shell structures Design, make and evaluate a storage box for a sibling/friend for their snacks.	Food Healthy and varied diet Design, make and evaluate a sandwich/wrap/pitta pocket for themselves to have on a picnic.
Year 4	Mechanisms Pneumatics Design, make and evaluate a moving vehicle for yourself to race in the class race for entertainment.	Electrical systems Simple circuits and systems Design, make and evaluate an illuminated sign for a safe adult as a gift.	Textiles 2D shape to 3D product Design, make and evaluate a pencil case for a friend to store their stationery.
Year 5	Food Celebrating culture and seasonality	Structures Frame structures	Mechanisms Pulleys and gears

Design Technology Curriculum Overview

	Design, make and evaluate a seasonal meal (soup and bread), to share with special people in my life to celebrate Christmas.	Design, make and evaluate a bird box for nesting birds on our school grounds to protect them from the elements.	Design, make and evaluate a moving fairground ride with gears for year 3 children for entertainment.
Year 6	<p>Textiles Combining different fabric shapes Design, make and evaluate a bag for themselves which can be used to carry a chosen item.</p> <p>**want to add some cultural food – RE?</p>	<p>Electrical Systems More circuits and switches Design, make and evaluate an alarm for a museum curator to protect Early Islamic Civilisation artefacts.</p>	<p>Mechanical systems Cams Design, make and evaluate an ocean moving toy for year 1 children for entertainment.</p>