Design & Technology at Antingham & Southrepps - We are Designers and Engineers

Our Curriculum Drivers:

Aspirations	To have high aspirations for my future and know all of the available opportunities open to me
Independence	To have the independence to be able to reach my full potential and take responsibility
Mental and Physical Health	To value my own self-worth to be the best I can be
Resilience	To have the courage to bounce back from failure or challenges and grow as an individual

At Antingham and Southrepps Primary School & Nursery our aim with DT Is to provide children with knowledge, understanding and skills that prepare them for life beyond primary education and ultimately help them become resourceful, innovative, enterprising and capable citizens. Children at Antingham and Southrepps make real products or prototypes of real products designed to solve real problems in ways which are relevant to the children's ages and stages of development. Children are encouraged to use their imagination and creativity but also to consider the needs of the product user be it themselves or another individual or group.

Children will learn that designing and making is an iterative process through which they will need to continually evaluate their product by testing their ideas and making improvements. They will also use these important critical thinking skills to critique existing products and the work of others.

Throughout their time at Antingham and Southrepps Primary School, children complete projects where they design and make: structures; mechanisms and mechanical systems; electrical systems including programming; textiles products and food products. These projects can be linked to topics and should always be based within a problem that needs to be solved by the child individually, in a pair or group.

The children use a wide range of technology at Antingham and Southrepps PrimarySchool - iPads, BeeBots and laptops with various operating systems. This means that by the time they come to their KS2 Programming and Control units, they are familiar with programming technology through their computing lessons and are ready to use the Primary Crumbles to programme LEDs, motors and various switches within their products.

Use of the local farming links and area is encouraged to help children understand seasonality and where their food comes from within Cooking and Nutrition projects. Tailoring other projects to Antingham and Southrepps Primary School and the local area is also successful with Year 2 & 3 with a local farmer visit to school as well as visiting a local farm and its shop and Reception and Year 1 inviting a local Norfolk company Orchard Toys to come and speak to the children during their Toys topic.

Through DT children will draw on and develop a broad range of knowledge from other subjects including English, maths, science, computing and art.

MILESTONES:

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Years 1 & 2	Years 3 & 4	Years 5 & 6
 Cut, peel or grate ingredients safely and hygienically. 	 Develop ideas from starting points throughout the curriculum. 	 Understand the importance of correct storage and handling of
 Measure or weigh using measuring cups or electronic scales. 	 Collect information, sketches and resources. 	ingredients (using knowledge of micro-organisms).
Assemble or cook ingredients.	 Adapt and refine ideas as they progress. 	 Measure accurately and calculate ratios of ingredients to scale up or
 Cut materials safely using tools provided. 	 Explore ideas in a variety of ways. 	down from a recipe.
 Measure and mark out to the nearest centimetre. 	 Comment on artworks using visual language. 	 Demonstrate a range of baking and cooking techniques.
Demonstrate a range of cutting and shaping techniques (such as	 Use a number of brush techniques using thick and thin brushes to 	 Create and refine recipes, including ingredients, methods, cooking
tearing, cutting, folding and curling).	produce shapes, textures, patterns and lines.	times and temperatures.
Demonstrate a range of joining techniques (such as gluing, hinges	Mix colours effectively.	 Cut materials with precision and refine the finish with appropriate
or combining materials to strengthen).	 Use watercolour paint to produce washes for backgrounds then add 	tools (such as sanding wood after cutting or a more precise scissor
 Shape textiles using templates. 	detail.	cut after roughly cutting out a shape).
Join textiles using running stitch.	 Experiment with creating mood with colour. 	 Show an understanding of the qualities of materials to choose
Colour and decorate textiles using a number of techniques (such as	 Select and arrange materials for a striking effect. 	appropriate
dyeing, adding sequins or printing).	Ensure work is precise.	tools to cut and shape (such as the nature of fabric may require
• Diagnose faults in battery operated devices (such as low battery,	 Use coiling, overlapping, tessellation, mosaic and montage. 	sharper scissors than would be used to cut paper).
water damage or battery terminal damage).	 Create and combine shapes to create recognisable forms (e.g. 	 Create objects (such as a cushion) that employ a seam allowance.
 Model designs using software. 	shapes made from nets or solid materials).	 Join textiles with a combination of stitching techniques (such as
 Use materials to practise drilling, screwing, gluing and nailing 	 Include texture that conveys feelings, expression or movement. 	back stitch for seams and running stitch to attach decoration).
materials to make and strengthen products.	 Use clay and other mouldable materials. 	 Use the qualities of materials to create suitable visual and tactile
 Create products using levers, wheels and winding mechanisms. 	 Add materials to provide interesting detail. 	effects in the decoration of textiles (such as a soft decoration for
• Design products that have a clear purpose and an intended user.	 Use different hardnesses of pencils to show line, tone and texture. 	comfort on a cushion).
 Make products, refining the design as work progresses. 	 Annotate sketches to explain and elaborate ideas. 	 Create circuits using electronics kits that employ a number of
Use software to design.	 Sketch lightly (no need to use a rubber to correct mistakes). 	components (such as LEDs, resistors, transistors and chips).

• Explore objects and designs to identify likes and dislikes of the	Use shading to show light and shadow.	Write code to control and monitor models or products.
designs.	 Use hatching and cross hatching to show tone and texture. 	Develop a range of practical skills to create products (such as
 Suggest improvements to existing designs. 	 Use layers of two or more colours. 	cutting, drilling and screwing, nailing, gluing, filing and sanding).
 Explore how products have been created. 	 Replicate patterns observed in natural or built environments. 	 Convert rotary motion to linear using cams.
	 Make printing blocks (e.g. from coiled string glued to a block). 	Use innovative combinations of electronics (or computing) and
	Make precise repeating patterns.	mechanics in product designs.
	Shape and stitch materials.	• Design with the user in mind, motivated by the service a product will
	 Use basic cross stitch and back stitch. 	offer (rather than simply for profit).
	Colour fabric.	Make products through stages of prototypes, making continual
	Create weavings.	refinements.
	Quilt, pad and gather fabric.	 Ensure products have a high quality finish, using art skills where
	 Create images, video and sound recordings and explain why they 	appropriate.
	were created.	Use prototypes, cross-sectional diagrams and computer aided
	Replicate some of the techniques used by notable artists, artisans	designs to represent designs.
	and designers.	• Combine elements of design from a range of inspirational designers
	Create original pieces that are influenced by studies of others	throughout history, giving reasons for choices.
		Create innovative designs that improve upon existing products.
		• Evaluate the design of products so as to suggest improvements to
		the user experience.

				ILLS AND KNOWLEDGE			
EYFS	Opportunities to choose the resources they need for their chosen activities. Handle equipment and tools effectively. Children know the importance for good health of a healthy diet. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology.						
SKILLS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
Generating ideas - designing	 Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through own experiences. Develop and communicate these ideas through talk and drawings and mock ups where relevant. 	 Generate ideas based on simple design criteria and their own experiences, explaining what they could make. Develop, model and communicate their ideas through talking, mock-ups and drawings. 	 Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. Use annotated sketches, prototypes, final product sketches and pattern pieces; communication technology, such as web-based recipes, to develop and communicate ideas. 	 Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. 	 Generate innovative ideas through research including surveys, interviews and questionnaires and discussion with peers to develop a design brief and criteria for a design specification. Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. And, where appropriate, computer-aided design. 	 Use research using surveys interviews, questionnaires and web-based resources. To develop a design specificatio for a range of functional products. Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. Generate and develop innovative ideas and share and clarify these through discussion. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. 	
Making	 Select and use simple utensils, tools and equipment to perform a job e.g. peel, cut, slice, squeeze, grate and chop safely; marking out, cutting, joining and finishing; cut, shape and join paper and card. Select from a range of ingredients and materials according to their characteristics to create a 	 Plan by suggesting what to do next. Select and use tools, equipment, skills and techniques to perform practical tasks, explaining their choices. Select new and materials, components, reclaimed materials and construction kits to build and create their products. 	 Plan the main stages of making. Select from and use a range of appropriate utensils, tools and equipment with some accuracy related to their product. Select from and use finishing techniques suitable for the product they are creating. 	 Order the main stages of making. Select and use appropriate tools to measure, mark out, cut, score, shape and combine with some accuracy related to their products. Explain their choice of materials according to functional properties and aesthetic qualities. Select from and use 	Produce detailed lists of equipment and fabrics relevant to their tasks. Write a step-by-step plan, including a list of resources required. Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine appropriate ingredients, materials and	 Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. Competently select from and use appropriate tools to accurately measure, mark, cut and assemble materials, and securely connect electrical components to produce reliable, functional 	

	chosen product.	Use simple finishing techniques suitable for the products they are creating.		materials and components, including ingredients, construction and electrical components according to their function and properties.	resources.	 products. Use finishing and decorative techniques suitable for the product they are designing and making.
Evaluating	 Taste, explore and evaluate a range of products to determine the intended user's preferences for the product Evaluate their ideas throughout and finished products against design criteria, including intended user and purpose. 	 Explore a range of existing products related to their design criteria. Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria 	 Investigate a range of 3-D textile products, ingredients and lever and linkage products relevant to their project. Test their product against the original design criteria and with the intended user. Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. 	 Investigate and evaluate a range of products including the ingredients, materials, components and techniques that are used. Test and evaluate their own products against design criteria and the intended user and purpose. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. 	 Investigate and analyse products linked to their final product. Compare the final product to the original design specification and record the evaluations. 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. 	 Continually evaluate and modify the working features of the product to match the initial design specification. Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. Test the system to demonstrate its effectiveness for the intended user and purpose.
Vocabulary	 planning, investigating design, evaluate, make, user, purpose, ideas, product. Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The eat well plate. Know and use technical and sensory vocabulary relevant 	Investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function.	User, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing.	Evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations.	Design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype.	Function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype.
	to the project.	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
KNOWLEDGE	YEAR 1		Know how to use	Know how to use		Know how to use utensils
Cooking & Nutrition	 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 eat well plate. Know and use technical and sensory vocabulary relevant to the project 	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 eat well plate. • Know and use technical and sensory vocabulary relevant to the project.	 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 appropriately. 	 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 appropriately. 	 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. 	 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.
Vocabulary	fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients	fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal,	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	protein, vitamins, nutrients, nutr dairy, allergy, intolerance, savo	e, herbs fat, sugar, carbohydrate, ition, healthy, varied, gluten, ury, source, seasonality, stir, pour, mix, rubbing in, whisk,

Structures	 Know how to make freestanding structures stronger, stiffer and more stable. Know and use technical vocabulary relevant to the project. 	 Develop and use knowledge of how to construct strong, stiff shell structures. Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. Know and use technical vocabulary relevant to the project 		 Know and use technical vocabulary relevant to the project. Develop and use knowledge of how to construct strong, stiff shell structures. 	
Vocabulary	cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder.	Year 1 vocabulary and: shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision		shell structure, three- dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity, marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating, font, lettering, text, graphics, decision	frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent
Textiles	 Understand how simple 3-D textile products are made, using a template to create two identical shapes. Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling. Explore different finishing techniques Know and use technical vocabulary relevant to the project. 	 Year 1 plus: Know how to strengthen, stiffen and reinforce existing fabrics. 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. 		 Understand how to securely jo Produce a 3-D textile product shapes and different fabrics. 	oin two pieces of fabric together from a combination of accurately made pattern pieces, fabric be strengthened, stiffened and reinforced where appropriate. bulary relevant to the project.
Vocabulary	joining and finishing techniques, template, pattern pieces, mark o		fabric, names of fabrics, fasteni structure, finishing technique, s templates, stitch, seam, seam,	trength, weakness, stiffening,	seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings
Mechanisms	 Explore and use sliders and levers. Understand that different mechanisms produce different types of movement. Know and use technical vocabulary relevant to the project. 	 Explore and use wheels, axles and axle holders. Distinguish between fixed and freely moving axles. Know and use technical vocabulary relevant to the project. 			and electrical systems have an input, process and an output. ulleys can be used to speed up, slow down or change the direction
Vocabulary	slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards	vehicle, wheel, axle, axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used	mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating		pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output
Electrical Systems			Understand and use electrical systems in their products linked to science coverage. Apply their understanding of computing to program and control their products. Know and use technical vocabulary relevant to the project. Understand and use electrical systems in their products linked to science coverage. Apply their understanding of computing to program, monitor and control their products. Know and use technical vocabulary relevant to the project. Know and use technical vocabulary relevant to the project.		computing to program and control their products. bulary relevant to the project. I systems in their products linked to science coverage. computing to program, monitor and control their products.

Vocabulary	series circuit, fault, connection, toggle, switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device.
	reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit (Year 5&6 vocab)

Kapow offers full coverage of the KS1 and KS2 Design & Technology curriculum and we have categorised our content into five areas:

- Structures
- Mechanisms
- Electrical Systems
- Cooking and Nutrition
- Textiles

Aside from Electrical Systems, which is KS2 only, each of these acts as the focus for a topic within each year group:

Our Unit Overviews

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
School Value	Be Positive	Take Part	Aim High	Be Respectful	Keep Trying	Challenge Yourself	
Curriculum Drivers		Aspirations - To have high aspirations for my future and know all of the available opportunities open to me Independence - To have the independence to be able to reach my full potential and take responsibility Mental and Physical Health - To value my own self-worth to be the best I can be Resilience - To have the courage to bounce back from failure or challenges and grow as an individual					
Whole School Enhancement Events	International Day Halloween Harvest Festival World Peace Day School Council Elections	Pink Day Christmas Fair & Enterprise Project Black History Month Anti-Bullying Week Odd Socks Day	STEM Day World Book Day Children's Mental Health Week Safer Internet Day LGBT Week	Easter Bonet Parade Aspirations Week Arts Week Sports Week	A&S Talent Show Christian Aid Week Wheels Week Sports Day Autism Awareness Week	Summer Fair & Enterprise Project Leavers & Prize Giving Art Exhibition Environmental Science Project	
CYCLE A Year R & 1	Cooking & Nutrition -making bread	Textiles – Making a purse	Mechanisms – Catapults	Cooking & Nutrition - Making a fruit/vegetable smoothie		Structures -Making windmills	
CYCLE A Years 2 & 3		Textiles- Cushions	Structures - Constructing a Pyramid	Cooking & Nutrition – Adapting a recipe	Mechanisms - (wheels and axles) making a Ferris wheel		
CYCLE A Years 4, 5 & 6		Textiles - Stuffed Toys	Structures - Making a Saxon/Viking Church- based on pavilion unit on Kapow	Cooking & Nutrition – Making pizzas		Electrical Systems - Static Electricity (taught in class)	
CYCLE B Year R & 1	Cooking & Nutrition - Making Gingerbread	Textiles – Making a puppet	Mechanisms – Making a London Bus	Cooking & Nutrition – A balanced diet and food tasting culturally	Structures - Making Aboriginal instruments		
CYCLE B Years 2 & 3		Textiles – Making a bag	Structures – Make a hot air balloon	Cooking & Nutrition - Eating seasonally	Mechanisms - Pneumatic toys		
CYCLE B Years 4, 5 & 6		Textiles - Waistcoats	Structures – Bridges	Cooking & Nutrition - What could be healthier	Mechanisms - Pop up books	Electrical Systems -Torches (taught in class)	
CYCLE C Years 4, 5 & 6		Textiles - Bookmarks, buttons and fastenings	Structures – Playgrounds	Cooking & Nutrition - Come dine with me	Mechanisms - Automata Toys	Electrical Systems - Steady Hand Games	

ASPIRATIONS FOR THE FUTUE

Pupils develop an understanding of how subjects and specific skills are linked to future jobs. Here are some of the jobs you could aspire to do in the future as an Artist:

Graphic designer	Illustrator	Game/web designer
Fashion designer	Photographer	Construction/building
Civil engineer	Farrier	Vehicle design/technology

	Our Feeder High Schools KS3 Year 7 Art Curriculum Snapshot						
Cromer Academy	Graphics, Branding and Printing Techniques: Typography and Logo design, Record/CD sleeve and printing, T-shirt design and Screen Printing						
North Walsham High School	H&S Product Analysis Electronics - Key Light: Series/Parallel Circuits, RA Knives and Pillar Drill, Use greyboard and lamination, Grid method for drawing Polymers - 3D Acrylic Shape: Thermoforming and thermosetting polymers, RA Line bender and Oven, Deforming of plastics "Natural/Manufactured Polymers - Felt: Fibres, fabrics and staples, Sources of polymers, non-woven textiles"	Natural/ Manufactured Polymers - Felt: creation of felted wool fabric, testing for durability and elasticity Metals - 2D Shape: Aluminium, Ferrous, Non-ferrous, Alloys, Properties, Wastage, RA Junior hacksaw and Tin snips and Hand files, Manufactured Timber - 2D Shape MDF, Hardwoods, Softwoods and Manufactured Boards, Manufactured Timber - 2D Shape RA Coping saw Finishes - metal and timber	TRIP - Cadbury World (cross curricular - Geography) Modern and Smart Materials - Polymorph and Thermo- chromic: Scales of production, Ergonomics Metals - 3D Shape: Pewter, Casting, Enamelling, CAD - 3D Modelling in Solidworks CAD - 3D Modelling in Solidworks				
Aylsham High School	TBC						