

DT overview

Year 1		Structures - Windmills	Food Technology Fruit and vegetable smoothie	Mechanisms Moving story books	Textiles - Puppets	Mechanisms – Wheels and axels
Year 2	Mechanisms and Moving Monsters	Mechanisms and a Ferris Wheel	A Balanced Diet		Structures – Baby Bears Chair	Textiles – Pouches
Year 3	Textiles Cushions	Mechanisms Pneumatic systems	Electrical Systems Static electricity	Structures Castles	Food Tech Eating Seasonally	
Year 4	Fastenings	Adapting a recipe	Slingshot cars		Pavilions	Torches
Year 5	Mechanical Systems – Pop up books	Digital World – Monitoring devices	Electrical Systems – Electronic Greeting cards	Food – What could be healthier	Structures – Bridges	Textiles – Stuffed toys
Year 6	Textiles: waistcoats	Electrical Systems: steady hand game	Mechanical Systems: automata toys	Food: Come dine with me	Structure: Playgrounds	Digital World: navigating the world

Year 1	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Food technology</u> Fruit and vegetable smoothie	Learn how to identify fruits and vegetables. Then apply this knowledge to design and make a smoothie.	<u>Design</u> • how to design a smoothie carton. • the names of a variety of different fruit and vegetables and select fruits and vegetables for a smoothie recipe. <u>Make</u> • how to explain how to safely prepare, chop and blend fruit and vegetables. <u>Evaluate</u> • to trial and explore a combination of ingredient and explain which fruit and vegetables they have used to make a smoothie, specifying favourite combinations. <u>Cooking and nutrition</u> • to recognise the difference between fruit and vegetables, describe texture and taste, develop knowledge about where fruit and vegetables grown and identify parts of the plant.	• Blender • Template • Vegetables • Peel • Peeler • Recipe • Slice • Ingredients • Fruit
<u>Mechanisms</u> Moving story books	Explore levers and sliders to make a moving story book.	<u>Design</u> • to sketch the mechanical elements in the moving story book <u>Make</u> • to assemble mechanisms to create various movements (up, down and around) <u>Evaluate</u> • to reflect on finished moving story books and evaluate their work. <u>Technical knowledge</u> • how slides and levers work. • how to assemble mechanisms to create various movement.	• Assemble • Design • Evaluation • Mechanism • Model • Sliders • Stencil • Target audience • Template • Test
<u>Structures</u> Windmills	Design and create their own structure	<u>Design</u> • to design using specific preferences	• Client • Design

Year 1	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
	and functioning windmill	<u>Make</u> - to use templates and nets to create a functional mechanical windmills. <u>Evaluate</u> - to explore different forms of windmill and know how to test finished windmills <u>Technical knowledge</u> - to develop awareness of different structure formats and understand how to turn 2D nets into 3D shapes.	- Evaluation - Net - Stable - Strong - Test - Weak - Windmill
<u>Textiles</u> Puppets	Learn the different ways the can join fabrics together through the creation of a puppet.	<u>Design</u> - how to design a puppet using a template. <u>Make</u> - to cut and join fabric using glue, pins or staples, as well as attaching other features. <u>Evaluate</u> - to test and explore different methods of joining fabrics. <u>Technical knowledge</u> - to explain how to join two fabrics together using a variety of techniques.	- Decorate - Design - Fabric - Glue - Model - Hand puppet - Safety pin - Staples - Stencil - Template
<u>Mechanisms</u> Wheels and axels	Experiment with mechanisms and troubleshoot why some wheels don't rotate, before designing and building a moving vehicles	<u>DESIGN</u> - how to cut and measure accurately following a design brief <u>MAKE</u> - to explain how to adapt mechanisms. <u>EVALUATE</u> - to research and tests mechanisms. <u>TECHNICAL KNOWLEDGE</u> - to be able to explain how wheels work as part of a full mechanism including axles and axle holders.	- Axle - Axle holder - Chassis - Design - Evaluation - Fix - Mechanic - Mechanism - Model - Test - wheel

Year 2	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Food technology</u> A balanced diet	Explore what makes a balanced diet and taste test combinations of different food groups before designing and making a wrap.	<u>DESIGN</u> - how to design a wrap and explain why it is healthy. <u>MAKE</u> - to prepare food safely and hygienically, chopping and slicing safely using a bridge or claw grip <u>EVALUATE</u> - how to conduct product research, trialling and feeding back on foods taste, texture and aroma. <u>COOKING AND NUTRITION</u> - to Identifying each of the food groups, understanding what makes a balanced diet, developing an awareness of hidden sugars in everyday foods	Alternative Diet Balanced diet Evaluation Expensive Healthy Ingredients Nutrients Packaging Refrigerator Sugar Substitute
<u>Mechanisms</u> Mechanisms and moving monsters	Analyse existing levers and linkage systems to identify components that they can use to plan, design and develop a mechanical monster.	<u>DESIGN</u> - to devise and use design criteria, plan for a design and create a mechanical toy. - Draw simple diagrams to express ideas. <u>MAKE</u> - to cut and assemble accurately, selecting appropriate crafting materials and tools such as card, paper, glue and paper fasteners. <u>EVALUATE</u> - how to carry out primary research, explore and discuss existing objects which have linkages, levers and pivots. <u>TECHNICAL KNOWLEDGE</u> - to identify inputs and outputs as part of mechanisms, developing an understanding of how linkages, levers and pivots operate together.	Evaluation Input Lever Linear motion Linkage Mechanical Mechanism Motion Oscillating motion Output Pivot Reciprocating motion Rotary motion Survey

Year 2	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
Structures Baby bears chair	Experiment with different shapes and manipulate materials to explore and evaluate a range of structural properties. They apply this knowledge to their own design, make and test task.	<u>DESIGN</u> - to design using a criteria and apply knowledge of structure through planning. - to identify flaws in a pre-modelled design and think about ways to fix or strengthen them. <u>MAKE</u> - to cut and assemble accurately and select from materials based on their characteristics. <u>EVALUATE</u> - to explore natural and man-made structures, testing and evaluating, analysing existing chairs including those established by a designer. <u>TECHNICAL KNOWLEDGE</u> - to understand strength, stability and stiffness, knowing that different shapes can strengthen or weaken structures, know materials can be manipulated to improve strength and stiffness.	Function Man-made Mould Natural Stable Stiff Strong Structure Test Weak
<u>Textiles</u> Pouches	Design and make their own wallet or purse, learning to use running stitch to join two pieces of fabric together.	<u>DESIGN</u> - to develop and sketch design ideas using a template. <u>MAKE</u> - to thread a needle, sew a running stitch, prepare fabrics for sewing and tie a secure knot. <u>EVALUATE</u> - to discuss the make process and finish product, review and evaluate others final outcome. <u>TECHNICAL KNOWLEDGE</u> - to explain the parts of needle (point and eye). - To explore and explain alternative ways of joining fabrics and embellishments.	Accurate Fabric Knot Pouch Running stitch Sew Shape Stencil Template Thimble
<u>Mechanisms</u> Ferris Wheel	Explore existing mechanisms in order to design, test and	<u>DESIGN</u>	Axle Decorate

Year 2	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
	make their own big wheel style ride.	- to use ICT to produce an inspiration board to review and annotate, design mechanisms informed by research. <u>MAKE</u> - to measure and cut accurately, working to scale and follow a design brief, selecting materials based on their characteristics. <u>EVALUATE</u> - to test and adapt mechanisms, research mechanisms and existing products. <u>TECHNICAL KNOWLEDGE</u> - to understand and consolidate how an axle, axle holder and wheel work in harmony understand various [properties of basic materials such as plastic, wood and metal.	Evaluation Ferris wheel Mechanism Stable Strong Test Waterproof weak

Year 3	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Food technology</u> Eating seasonally	Learn about seasonality and how the climate a food is grown in can alter the way it tastes and make a crumble and tart using seasonal ingredients.	<u>Design</u> - how to generate and adapt a seasonal recipe idea based on research, designing to simple criteria <u>Make</u> - to safely prepare fruit and vegetables , follow a recipe, adapt a recipe <u>Evaluate</u> - to taste and evaluate their dessert against criteria <u>Cooking and nutrition</u> - what foods are in season and when, benefits of various foods, how climate affects which foods can grow naturally in different environments	Climate (dry, Mediterranean, polar, temperate, tropical) Exported Imported Nutrients Recipe Seasonal food
<u>Mechanisms</u> Pneumatic systems	Examine pneumatic systems using syringes and balloons then apply their understanding of mechanical systems to create their own pneumatic toys.	<u>Design</u> - to generate and communicate ideas using thumbnail sketches, exploded-diagrams and modelling, draw plans to house the mechanism <u>Make</u> - to select appropriate materials and equipment for functional and aesthetic purposes <u>Evaluate</u> - to assess how well their product works and if it matches their original design ideas and criteria <u>Technical knowledge</u> - how pneumatic systems work, identify the key inputs and outputs of the mechanism, to express the need for visual communication in the design process	Exploded- diagram Function Input Lever Linkage Mechanism Motion Net Output Pivot Pneumatic system Thumbnail sketch
<u>Structures</u> Castles	Learn more advanced construction techniques and plan for complex arrangements of	<u>Design</u> to plan for manufacture, establish and use a design criteria to help focus and evaluate their work, utilise research to inform idea generation	2D shapes 3D shapes Castle Design criteria Evaluate Façade

Year 3	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
	structures with continual emphasis on evaluating throughout.	<u>Make</u> - to use more demanding practical skills (paper engineering/paper folding techniques), include traditional and digital net creation using computer-aided-design (CAD) <u>Evaluate</u> - to reflect on their project as it progresses, evaluate their own and others' final product <u>Technical knowledge</u> - to apply prior understanding and increasing knowledge of paper or card nets and structures; consolidate methods and techniques to improve stability and strength	Feature Flag Net Scoring Stable Strong Structure Tab Weak
<u>Textiles</u> Cushions	Learn to sew cross stitch and applique and then apply this to the design and creation of a cushion.	<u>Design</u> - to design and plan the style, shape, and seams of a cushion; use pattern piece paper templates and models <u>Make</u> - sew cross stitch and running stitch to join, complete seams, seal stuffing and add applique decorative elements, follow specified design criteria <u>Evaluate</u> - to review existing products, to express constructive feedback on others' work <u>Technical knowledge</u> - that fabrics can be layered for effect, recognise the appearance and technique for different stitch types, including strength to reinforce joins	Applique Cross-stitch Cushion Decorate Fabric Patch Running-stitch Seam Stencil Stuffing Target audience Template
<u>Electrical systems</u> Static electricity	Explore static electricity and observe the effects of it on different objects before designing and	<u>Design</u> to use research and design criteria to develop ideas and determine target audience; to utilise computer-aided-design (CAD) to draw a box panel for the game	Attract Component Electrostatic Motion Repel Test

Year 3	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
	making a simple game which uses static electricity.	<u>Make</u> - to use electrostatic energy to move objects in isolation as well as part of a system; to cut, measure and join various crafting materials <u>Evaluate</u> - to evaluate and adapt designs, experiment with scientific theories to inform a design, to listen and act on constructive feedback gathered from others <u>Technical knowledge</u> - what static electricity is and how to generate it, what a target audience is, to construct nets as part of a product to house a game	

Year 4	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Food technology</u> Adapting a recipe	Adapt a recipe by adding or altering the ingredients and then work in groups to create a final design that falls within a set budget and design brief.	<u>Design</u> - to review existing products to inform design ideas, work within a set design brief <u>Make</u> - to follow but adapt an existing recipe, to prepare food hygienically, to combine ingredients to form a basic dough <u>Evaluate</u> - to reflect on and identify flavours from a prototype, review aspects to change to improve the current recipe <u>Cooking and nutrition</u> - the cost implication behind professional food preparation, alter a dough to be savoury or sweet, to mix dry ingredients before combining with wet	Budget Equipment Flavour Ingredients Method Net Packaging Prototype Quantity Recipe Unit of measurement Utilities
<u>Mechanisms</u> Slingshot cars	Use kinetic energy to power slingshot cars, designing and making their own and then testing their effectiveness in time trials	<u>Design</u> - to develop designs following a list of design criteria, to model and test the launch chassis <u>Make</u> - to select the materials and tools to measure, mark, cut and assemble accurately; use nets and tabs to design and make the car chassis. <u>Evaluate</u> - to test products in time trials, to compare to others' designs, discuss and record ways to improve the speed of the car, to understand the use of aerodynamic shapes in cars <u>Technical knowledge</u> - to utilise car-part terminology (e.g. chassis), consolidate net and template creation, recognise key mechanisms as part of a product's key functionality	Aesthetic Air resistance Chassis Design Function Graphics Kinetic energy Mechanism Net Structure

Year 4	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Structures</u> Pavilions	Be introduced to pavilion architecture, pupils experiment with frame structures before designing their own landscape and pavilion, using a wider range of materials and construction techniques.	<u>Design</u> - to explore and design within a given context/theme, aimed at a chosen target audience <u>Make</u> - to select from a range of materials and equipment to create frame structures and to add aesthetic value <u>Evaluate</u> - to discuss and review existing pavilions and expo centres <u>Technical knowledge</u> - what a pavilion is, building on prior knowledge of net structures and broadening knowledge of frames; understand that architects consider light, shadow and patterns when designing	Aesthetic Cladding Frame structure Function Inspiration Pavilion Reinforce Stable Structure Texture Theme
<u>Textiles</u> Fastenings	Research different types of fabric fastenings before deciding which they want to use in their design for a book sleeve.	<u>Design</u> - to devise a list of design criteria, plan production, annotate isometric diagrams and sketches to further develop initial design ideas <u>Make</u> - to select appropriate fastening types and equipment to sew, measure and cut fabric materials accurately <u>Evaluate</u> - to research and analyse methods of fastening fabric, determining the strength and use of each <u>Technical knowledge</u> - stitches and fastening and their pros/cons; how to use pattern pieces to tessellate and save fabric as well as produce more accurate results	Assemble Book sleeve Fabric Fastening Mock-up Net Running-stitch Stencil Template
<u>Electrical systems</u> Torches	Be introduced to electricity and electrical safety before making a	<u>Design</u> to design for a chosen user-profile, identifying key properties (e.g. reflective, water resistant) of a material and to utilise this knowledge to inform design ideas	Battery Bulb Buzzer Cell

Year 4	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
	simple electric circuit to create a functioning torch.	<u>Make</u> - to make a functional, operational electrical series-circuit and housing this appropriately, to select materials based on their characteristics <u>Evaluate</u> - to review and discuss existing torches including use and the reasons behind the materials in their build <u>Technical knowledge</u> - to identify electrical components by name (e.g. bulb, cell), build a working electrical series circuit and correct errors	Component Conductor Copper Electrical item Electronic item Electricity Insulator Series circuit Switch Test Torch Wire

Year 5	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Food technology</u> What could be healthier?	Adapt a Bolognese recipe by adding or altering ingredients and learn about the ethical and hygienic issues of food.	<u>Design</u> - to adapt an existing recipe <u>Make</u> - to cut, prepare and cook food hygienically. - to use knives, hot pans and hobs in a safe manner, recognising when meat is cooked. <u>Evaluate</u> to taste and feedback on existing pre-made Bolognese sauces, suggesting substitute ingredients. <u>Cooking and nutrition</u> - to know where meat comes from and understand ethical issues around beef. - to identify the nutritional values and contents on packaged food and know how to make healthier swaps.	Cross- contamination Diet Ethical issues Healthy Ingredients Method Nutrients Packaging Reared Recipe Research Substitute Vegan Vegetarian Welfare
<u>Mechanisms</u> Pop up books	Utilise a range of mechanisms and construction techniques to create a pop up story book for younger children	<u>Design</u> - to plan through storyboards and designs showing how the mechanism will operate as part of the design. <u>Make</u> - to make functional components using layers and spacers to construct pages, cutting and assembling with accuracy, <u>Evaluate</u> - to revisit and reflect on progress at numerous points throughout the project. <u>Technical knowledge</u> - to consolidate knowledge on sliders, levers and linkages. - to identify inputs and outputs utilising methods of paper modelling and folding to improve resilience during use.	Aesthetic Computer aided design(CAD) Design brief Exploded diagram Input Linkage Mechanism Motion Output Pivot Prototype Slider Structure Template.

Year 5	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Textiles</u> Stuffed toys	Learn blanket stitch and then design and make 3D stuffed toys	<u>Design</u> - to design for a purpose. - to consider which techniques and materials to use and create a paper pattern piece for the main body and individually for additional components. <u>Make</u> - to select and use appropriate stitch types to join and attach materials depending on their properties. <u>Evaluate</u> - to compare 3D objects and 2D designs. - to evaluate existing stuffed toys and identify poor sewing techniques and where possible rectify it. <u>Technical knowledge</u> - to identify methods of join fabric effectively, running stitch, cross stitch and blanket stitch. - how to create a hidden seam and seal stuffing.	Accurate Annotate Appendage Blanket stitch Design criteria Detail Evaluation Stuffing Template
<u>Electrical system</u> Electric greeting cards	Explore electric circuits and apply this knowledge to design and make their own electric greeting cards.	<u>Design</u> - to apply scientific knowledge to generate design ideas. - to identify target audience. - to consider methods of incorporating the circuit. <u>Make</u> - to select materials based on their properties (conductive, insulating). - to create and incorporate a functional series- circuit concealing it inside a card. <u>Evaluate</u> - to experiment with and test series and parallel circuits to determine which would be fit for purpose as part of their design ideas.	Battery Buzzer Circuit Component Conductor Copper Design criteria Function Graphite Innovative Insulator LED Modify Parallel circuits

Year 5	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
		<u>Technical knowledge</u> - to draw circuit diagrams and symbols. - to know the function of different circuit components understanding the terminology :insulator, conductor, LED battery.	Series circuit Switch Test Wire
<u>Structures</u> Bridges	Explore and experiment with a range of different bridge structures, forces and components involved in bridge building, before designing and making their own to test the destruction.	<u>Design</u> - to design arch and truss bridges, model various methods of bridge-making. <u>Make</u> - to use triangulation for bracing, select appropriate tools and equipment such as saw a and bench hooks to cut wood down to size and sandpaper to achieve a high quality finish. <u>Evaluate</u> - to test through trial and error to evaluate the successful and unsuccessful functional properties of a design and its materials. <u>Technical knowledge</u> - to understand the importance of compression and tension in bridge structures, establishing methods of reinforcing more complex structures to improve strength, stability and stiffness.	Abutment Accurate Arched bridge Beam bridge Compression Coping saw Evaluation File Forces Measure Predict Reinforce Research Right angle Sandpaper Set square Suspension bridge Tenon saw Tension Truss bridge

Year 6	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
<u>Food technology</u> Come dine with me	Work in groups, they will research and prepare a three course meal that will be taste tested and scored as well as researching the journey of their main ingredient, form 'farm to fork'.	<u>Design</u> - to research and read recipe books to inspire and develop innovative recipes as part of a three-course meal, plan the methods and determine the equipment required <u>Make</u> - to work with food hygienically and safely, work to a time-scale, to use a variety of cooking methods such as steaming, boiling and baking <u>Evaluate</u> - to evaluate others' three-course meal by tasting and scoring <u>Cooking and nutrition</u> - the risks of meat and fish when not cooked or stored properly, the safe storage of meat and fish, to design a balanced three-course meal	Accompaniment Cookbook Cross-contamination Equipment Flavour Ingredients Method Nationality Preparation Processed Reared Recipe Top-tips
<u>Mechanisms</u> Automata toys	Develop their woodworking skills and explore cams to design and make mechanical window displays	<u>Design</u> - to draw and annotate exploded and cross-sectional diagrams to illustrate ideas, model various cam shapes, generate design ideas based on a design brief <u>Make</u> - to measure, mark and cut woodwork accurately, select appropriate equipment, assemble components accurately to create a fully functioning mechanical toy <u>Evaluate</u> - to experiment with cams to establish which movement is fit for purpose against their design ideas, investigate and discuss existing automata toys, check accuracy of joints <u>Technical knowledge</u> - the relationship between cam, follower, axle, handle and toppler as part of a complete mechanism; to create stable frame structure to support the mechanism	Assembly-diagram Automata Axle Bench hook Cam Clamp Component Cutting list Dowel Drill bits Exploded diagram Follower Frame Function Hand drill Jelutong Linkage

Year 6	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
			Mechanism Model Right-angle Set square Tenon saw
<u>Structures</u> Playgrounds	Have the opportunity to be creative and experiment with a wide range of materials and equipment, applying prior knowledge of net and frame structures as well as bracing and cladding to design and make a playground	<u>Design</u> - to establish and use a list of design criteria, to draw a floor plan diagram to demonstrate what apparatus they plan to create and where it will be positioned <u>Make</u> - to use increasingly more demanding practical skills, select materials for their aesthetic and functional properties; to make, strengthen and stiffen a range of structures <u>Evaluate</u> - to evaluate and analyse existing and modelled playground structures; to explore different materials to achieve various textures, patterns and structures; to review others' work <u>Technical knowledge</u> - to apply knowledge of construction techniques to realise design ideas, to stabilise more complex structures using bracing, to create 3D shapes using custom nets	Apparatus Bench hook Cladding Coping saw Design Dowel Jelutong Landscape Modify Plan view Playground Prototype Reinforce Sketch Structure Tenon saw Texture Vice
<u>Textiles</u> Waistcoats	Learn how to measure, cut and assemble fabric to create a waistcoat. They will draw a design in accordance with their own design criteria.	<u>Design</u> - to devise a list of design criteria, sketching and annotating design ideas on a pattern piece and amend the measurements to suit their desired client <u>Make</u> - to mark out, cut and join fabrics accurately, create a consistent seam and attach fastenings appropriately, apply decorative features such as applique <u>Evaluate</u>	Annotate Detail Fabric Fastening Knot Properties Running-stitch Seam Sew

Year 6	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
		- to explore existing products and consider the user, materials and shape; to evaluate the final outcome against the design criteria and client's requirements and preferences <u>Technical knowledge</u> - how to create hidden seams, accurate and consistent stitches and secure fastenings	Shape Template Thread Unique Waistcoat Waterproof
<u>Electrical systems</u> Steady hand games	Create electromagnetic toys and more complex electronic circuits to create a steady hand game.	<u>Design</u> - to generate ideas through sketching and discussion, model ideas through prototypes, establish a list of design criteria <u>Make</u> - to select and use appropriate materials and equipment; to cut, measure and mark accurately including the use of set-squares and rulers <u>Evaluate</u> - to adapt products to improve functionality, test that the product is fit for purpose and operates as planned against success criteria <u>Technical knowledge</u> - to create and use electric series-circuits effectively, how to make electromagnetic motors, to create nets for 3D shapes to house the circuitry and act as a stable base	Battery Battery pack Bulb Bulb holder Buzzer Circuit Circuit symbol Component Conductor Copper Insulator LED Magnetic field Net Perspective drawing Plan Pliers Prototype Series circuit Side view Steady hand game Switch Symmetrical Test

Year 6	Pupils will..	Key knowledge they will learn....	Key vocabulary they will learn ...
			Top view Wire cutters