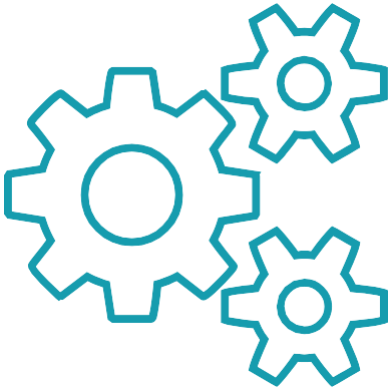
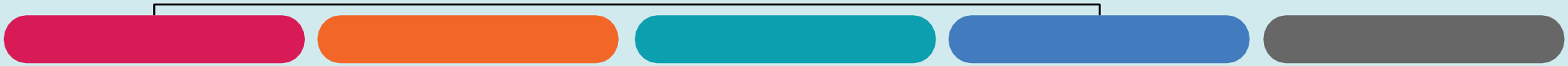


Design and technology
Curriculum overview

Kapow Primary offers full coverage of the KS1 and KS2 Design and technology curriculum and we have categorised our content into six areas:

- **Cooking and nutrition**
- **Mechanisms**
- **Structures**
- **Textiles**
- **Electrical systems [KS2]**
- **Digital world [KS2]**

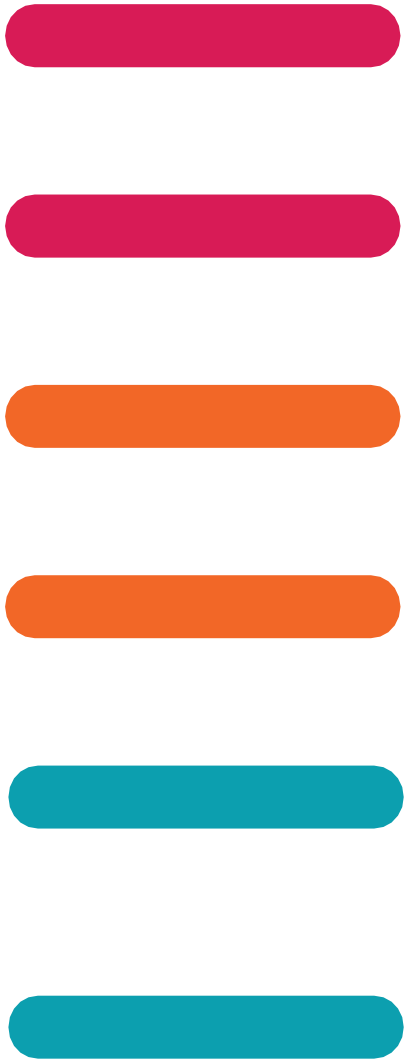
Year group	Cooking and nutrition	Mechanisms	Structures	Textiles	Electrical systems	Digital world New
	Aside from Electrical systems and Digital world, which is KS2 only, each of these acts as the focus for a unit within each year group					
1	Fruit and vegetables Smoothie	Moving storybook Wheels and axles	Windmills	Puppets		
2	A balanced diet	Moving monsters Ferris wheels	Baby bear's chair	Pouches		
3	Eating seasonally	Pneumatic toys	Castles	Cushions	Static electricity	Electronic charm
4	Adapting a recipe	Slingshot cars	Pavilions	Fastenings	Torches	Mindful moments timer
5	What could be healthier?	Pop-up books	Bridges	Stuffed toys	Electric greetings cards	Monitoring devices
6	Come dine with me	Automata toys	Playgrounds	Waistcoats	Steady hand games	Navigating the world



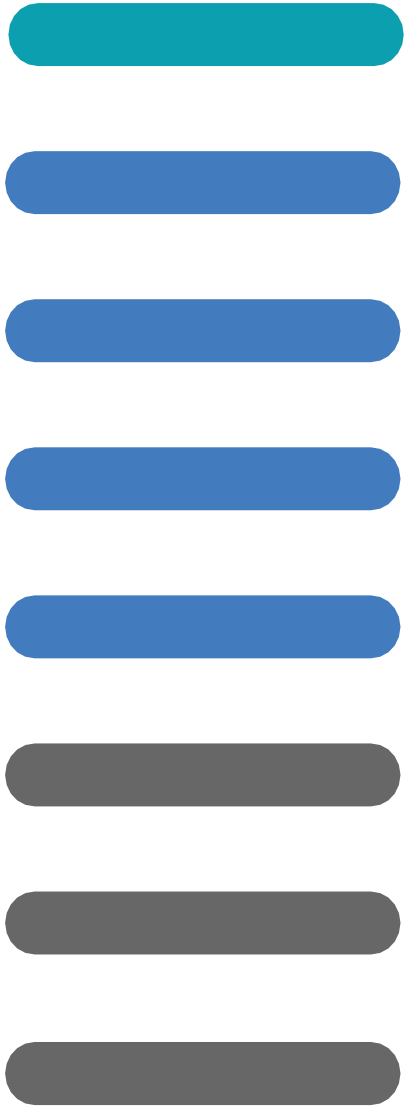
Key stage 1 - National Curriculum Design and technology subject content Pupils should be taught to:	Kapow Primary's Design and technology strands	Kapow Primary's topics Key stage 1 Year 1	 Year 2
Design purposeful, functional, appealing products for themselves and other users based on design criteria		Moving story books Windmills Puppets Wheels and axles	Moving monsters Baby bear's chair Pouches Ferris wheels
Generate, develop, model and communicate their ideas through talking, drawing, templates, mock- ups and, where appropriate, information and communication technology		Moving story books Windmills Puppets Wheels and axles	Moving monsters Baby bear's chair Pouches Ferris wheels
Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]		Fruit and vegetable smoothies Moving story books Windmills Puppets Wheels and axles	Moving monsters Baby bear's chair Pouches Ferris wheels
Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics		Fruit and vegetable smoothies Moving story books Windmills Puppets Wheels and axles	A balanced diet Moving monsters Baby bear's chair Pouches Ferris wheels
Explore and evaluate a range of existing products		Fruit and vegetable smoothies Moving story books Windmills Wheels and axles	A balanced diet Moving monsters Pouches Ferris wheels
Evaluate their ideas and products against design criteria		Moving story books Windmills Puppets Wheels and axles	Moving monsters Baby bear's chair Pouches Ferris wheels

Key stage 1 - National Curriculum Design and technology subject content Pupils should be taught to:	Kapow Primary's Design and technology strands	Kapow Primary's topics Key stage 1 Year 1	Year 2
Build structures, exploring how they can be made stronger, stiffer and more stable	Technical knowledge	Windmills	Baby bear's chair Ferris wheels
Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.	Technical knowledge	Moving story books Wheels and axles Windmills	Moving monsters Ferris wheels
Use basic principles of a healthy and varied diet to prepare dishes	Cooking and nutrition	Fruit and vegetable smoothies	A balanced diet
Understand where food comes from	Cooking and nutrition	Fruit and vegetable smoothies	A balanced diet

Key stage 2 - National Curriculum Design and technology subject content Pupils should be taught to:	Kapow Primary's Design and technology strands	Kapow Primary's topics Lower Key stage 2 Year 3	 Year 4
Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups		Eating seasonally Castles Cushions Static electricity Pneumatic toys Electronic charm	Pavilions Adapting a recipe Fastenings Torches Slingshot cars Mindful timer
Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design		Castles Cushions Static electricity Pneumatic toys Electronic charm	Pavilions Fastenings Torches Slingshot cars
Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately		Castles Cushions Static electricity Pneumatic toys Electronic charm	Pavilions Fastenings Torches Slingshot cars Mindful timer
Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities		Eating seasonally Castles Cushions Static electricity Pneumatic toys Electronic charm	Pavilions Adapting a recipe Fastenings Torches Slingshot cars
Investigate and analyse a range of existing products		Castles Cushions Static electricity Pneumatic toys	Pavilions Adapting a recipe Fastenings Torches Slingshot cars Mindful timer
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work		Castles Cushions Static electricity Pneumatic toys Electronic charm	Pavilions Adapting a recipe Fastenings Torches Slingshot cars Mindful timer

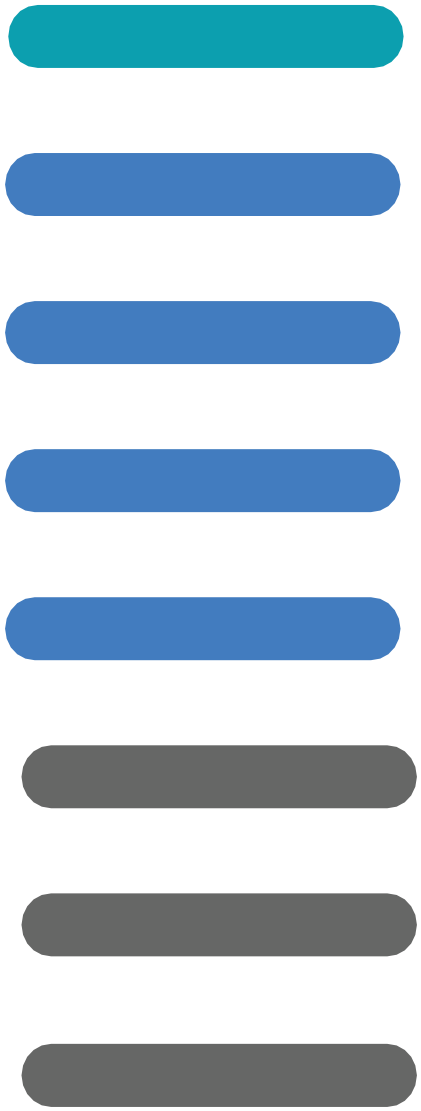


Key stage 2 - National Curriculum Design and technology subject content Pupils should be taught to:	Kapow Primary's Design and technology strands	Kapow Primary's topics Lower Key stage 2 Year 3	 Year 4
Understand how key events and individuals in design and technology have helped shape the world		Pneumatic toys Electronic charm	Torches Slingshot cars
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures		Castles	Pavilions
Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]		Pneumatic toys	Slingshot cars
Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]		Static electricity	Torches
Apply their understanding of computing to program, monitor and control their products		Electronic charm	Mindful timer
Understand and apply principles of a healthy and varied diet		Eating seasonally	Adapting a recipe
Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques		Eating seasonally	Adapting a recipe
Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed		Eating seasonally	Adapting a recipe

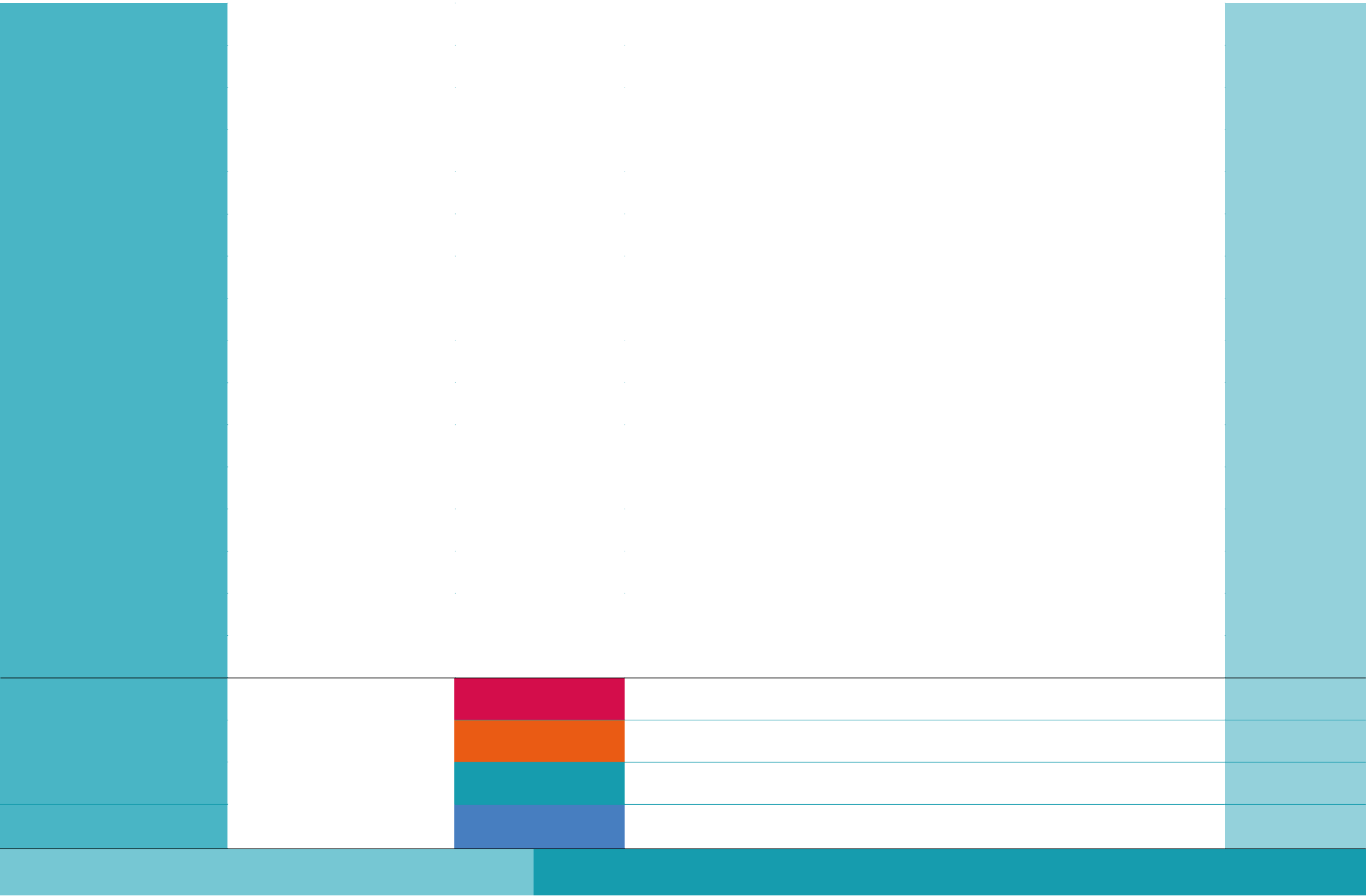


Key stage 2 - National Curriculum Design and technology subject content Pupils should be taught to:	Kapow Primary's Design and technology strands	Kapow Primary's topics Upper Key stage 2 Year 5	Year 6
Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups		What could be healthier? Pop-up books Stuffed toys Electronic greetings cards Bridges Monitoring devices	Come dine with me Automata toys Waistcoats Steady hand game Playgrounds Navigating the world
Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer- aided design		What could be healthier? Pop-up books Stuffed toys Electronic greetings cards Bridges Monitoring devices	Automata toys Waistcoats Steady hand game Playgrounds Navigating the world
Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately		Pop-up books Stuffed toys Electronic greetings cards Bridges	Automata toys Waistcoats Steady hand game Playgrounds Navigating the world
Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities		What could be healthier? Pop-up books Stuffed toys Electronic greetings cards Bridges	Come dine with me Waistcoats Steady hand game Playgrounds
Investigate and analyse a range of existing products		Pop-up books Stuffed toys Electronic greetings cards Bridges	Automata toys Waistcoats Steady hand game Playgrounds
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work		Pop-up books Stuffed toys Electronic greetings cards Bridges Monitoring devices	Automata toys Waistcoats Steady hand game Playgrounds Navigating the world

Key stage 2 - National Curriculum Design and technology subject content Pupils should be taught to:	**Kapow Primary's Design and technology strands**	**Kapow Primary's topics** Upper Key stage 2 Year 5	Year 6
Understand how key events and individuals in design and technology have helped shape the world		What could be healthier? Electronic greetings cards Monitoring devices	Come dine with me Automata toys Steady hand game
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures		Bridges Monitoring devices	Playgrounds
Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]		Pop-up books	Automata toys
Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]		Electronic greetings cards	Steady hand game
Apply their understanding of computing to program, monitor and control their products		Monitoring devices	Navigating the world
Understand and apply principles of a healthy and varied diet		What could be healthier?	Come dine with me
Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques		What could be healthier?	Come dine with me
Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed		What could be healthier?	Come dine with me



Year 1	Unit description Pupils will...	Curriculum coverage The key strands are:	In this unit, the pupils will be...	Cross-curricular links
Food: Fruit and vegetables smoothie (4 lessons) Go to unit	Learn how to identify fruits and vegetables. Then apply this knowledge to design and make a smoothie.	**Design**	Designing a smoothie carton, using traditional or digital (ICT) methods based on a chosen ingredient combination; selecting fruits and vegetables for a smoothie recipe	Science
		Make	Preparing, chopping and blending fruit and vegetables	
		Evaluate	Trialling and exploring combinations of ingredients, specifying favourite combinations	
		Cooking and nutrition	Recognising the difference between fruit and vegetables, describing texture and taste, developing knowledge about where fruit and vegetables grow, identifying parts of a plant	
Mechanisms: Moving story books (4 lessons) Go to unit	Explore levers and sliders to make a moving story book.	**Design**	Planning and sketching the mechanical elements in the moving story book	English
		Make	Assembling mechanisms to create various movements (up, down, along, around)	
		Evaluate	Reflecting on the finished moving story book, by expressing likes, dislikes and improvements	
		Technical knowledge	Exploring how levers and sliders work in a paper-card format to create different movements	
Structures: Windmills (4 lessons) Go to unit	Design and create their own structure and functioning windmill.	**Design**	Designing for a client and considering the client's preferences and requirements, following a basic list of criteria	Maths
		Make	Using templates and nets, selecting from basic crafting tools and materials (paper, card, scissors and glue) to create a functional mechanical windmill	
		Evaluate	Exploring different forms of windmill structures, testing the finished windmill	
		Technical knowledge	Developing awareness of different structure formats, forming an understanding of how to turn 2D nets into 3D shapes	
Textiles: Puppets (4 lessons) Go to unit	Learn the different ways they can join fabrics together through the creation of a puppet.	**Design**	Designing a puppet based on a character, using a template and considering which colours and features will be needed	English
		Make	Cutting and joining fabric using glue, pins or staples, as well as attaching any additional features	Art and design
		Evaluate	Testing and exploring different methods of joining fabrics, and determining which would be best for the puppet, reflecting on the finished product	
		Technical knowledge	Understanding the various techniques used to join two fabrics together	
Mechanisms: Wheels and axles (4 lessons) Go to unit	Experiment with mechanisms and troubleshoot why some wheels don't rotate, before designing and building a moving vehicle.	**Design**	Sketching, measuring and planning the chassis of the vehicle, including a computer- based digital racing flag design	Maths
		Make	Adapting mechanisms, measuring and cutting accurately to a design brief, working to scale and identifying commonly used materials for wheels	
		Evaluate	Researching and testing mechanisms	
			Investigating how wheels work as part of a full mechanism including axles and axle holders	



Year 2

	Unit description Pupils will...	Curriculum coverage The key strands are:	In this unit, the pupils will be...	Cross-curricular links
Food: **A balanced diet** (4 lessons) Go to unit	Explore what makes a balanced diet and taste test combinations of different food groups before designing and making a wrap.	**Design**	Planning for a set brief, following simple criteria, designing a healthy wrap	Maths Preparing food safely and hygienically, chopping and slicing safely using a bridge or claw grip Conducting product research, trialling and feeding back on foods taste, texture and aroma Identifying each of the food groups, understanding what makes a balanced diet, developing an awareness of hidden sugars in everyday foods
Mechanisms: **Moving monsters** (4 lessons) Go to unit	Analyse existing levers and linkage systems to identify components that they can use to plan, design and develop a mechanical monster.			
Structures: **Baby bear's chair** (4 lessons) Go to unit	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.			
Textiles: **Pouches** (4 lessons) Go to unit	Design and make their own wallet or purse, learning to use running stitch to join two pieces of fabric together.			Devising and using design criteria, planning for the design and creation of a mechanical toy, drawing simple diagrams to express ideas
Mechanisms: **Ferris wheel** (4 lessons) Go to unit	Explore existing mechanisms in order to design, test and make their own big wheel style ride.			Cutting and assembling accurately, selecting appropriate crafting materials and tools such as card, paper, glue and paper fasteners Carrying out primary

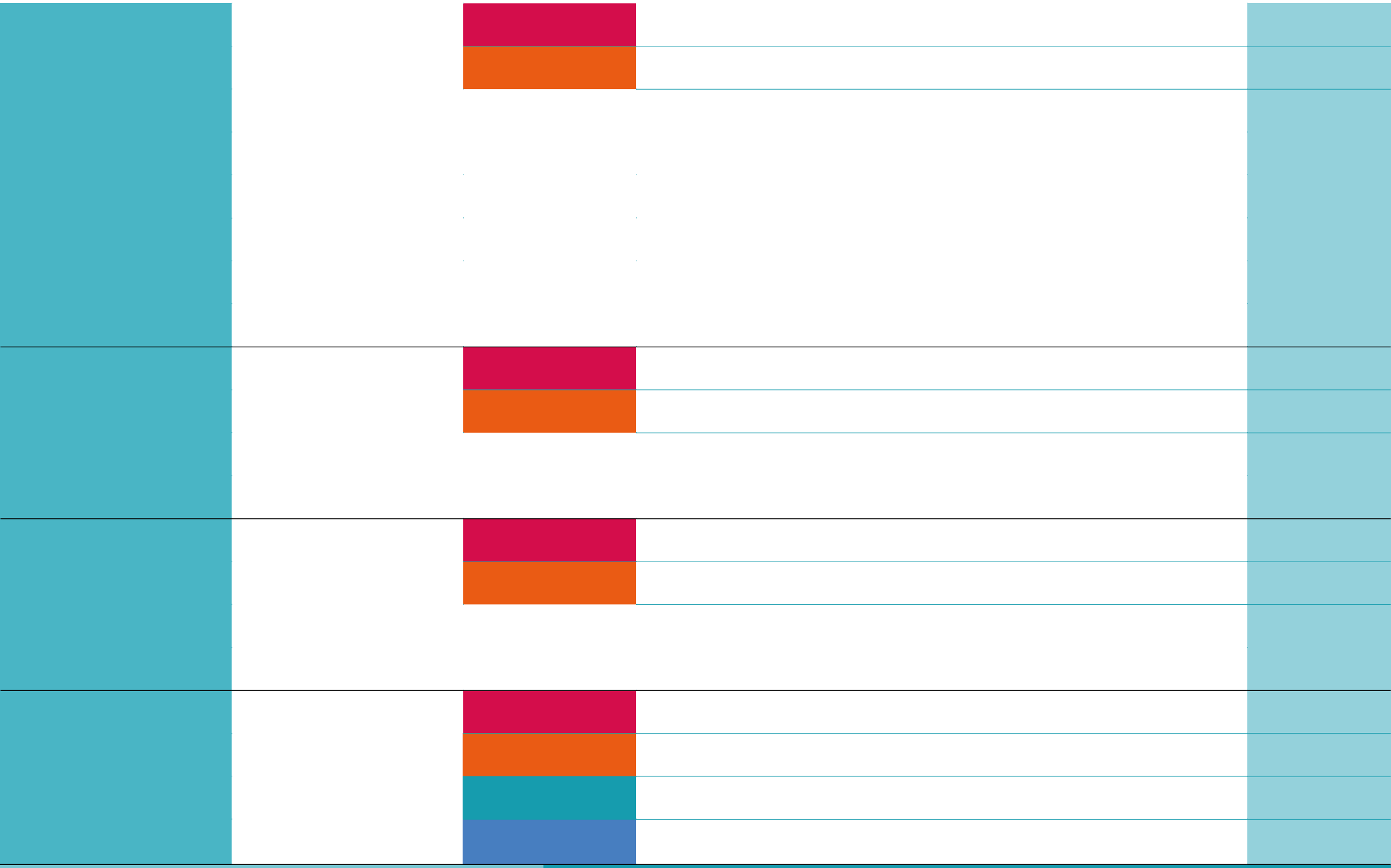
research, exploring and discussing existing objects which have linkages, levers and pivots Identifying inputs and outputs as part of a mechanism, developing an understanding of how linkages, levers and pivots operate together Designing for others, using criteria and applying knowledge of structures through planning Identifying flaws in a pre-modelled design and thinking about ways to fix or strengthen them, cutting and assembling accurately, selecting from materials based on their characteristics Exploring natural and man-made structures, testing and evaluating, analysing existing chairs including those by established designers Understanding strength, stability and stiffness, knowing that different shapes can strengthen or weaken structures, know materials can be manipulated to improve strength and stiffness Developing and sketching design ideas using a template Threading a needle, sewing a running stitch, preparing fabrics for	sewing, tying a secure knot Discussing the making process and finished product, reviewing other's final outcome Identifying parts of a needle (point and eye), understanding the alternative ways of joining fabrics and embellishments Using ICT to produce an inspiration board to review and annotate, designing mechanisms informed by research Measuring and cutting accurately, working to scale and following a design brief, selecting materials based on their characteristics Testing and adapting mechanisms, researching mechanisms and existing products Understanding and consolidating how an axle, axle holder and wheel work in harmony, understanding various properties of basic materials such as plastic, wood and metal	Science Maths Maths Art and design Maths Science

Year 3

Unit description Pupils will...	Curriculum coverage The key strands are:	In this unit, the pupils will be...	Cross-curricular links
Food: **Eating seasonally** (4 lessons) Go to unit	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.	**Design** Generating and adapting a seasonal recipe idea based on research, designing to simple criteria	Geography Safely preparing fruit and vegetables, following a recipe, adapting a recipe
Mechanisms: **Pneumatic systems** (4 lessons) Go to unit	Examine pneumatic systems using syringes and balloons then apply their understanding of mechanical systems to create their own pneumatic toys.		Tasting and evaluating their dessert against criteria Knowing what foods are in season and when, understanding the benefits of various foods, knowing how climate affects which foods can grow naturally in different environments
Structures: **Castles** (4 lessons) Go to unit	Learn more advanced construction techniques and plan for complex arrangements of structures with continual emphasis on evaluating throughout.		Generating and communicating ideas using thumbnail sketches, exploded-diagrams and modelling, drawing plans to house the mechanism
Textiles: **Cushions** (4 lessons) Go to unit	Learn to sew cross stitch and appliqué and then apply this to the design and creation of a cushion.		Selecting appropriate materials and equipment for functional and aesthetic purposes
Electrical systems: **Static electricity** (4 lessons) Go to unit	Explore static electricity and observe the effects of it on different objects before designing and making a simple game which uses static electricity.		Assessing how well their product works and if it matches their original design ideas and criteria Understanding how pneumatic systems work, identifying the key inputs and outputs of the

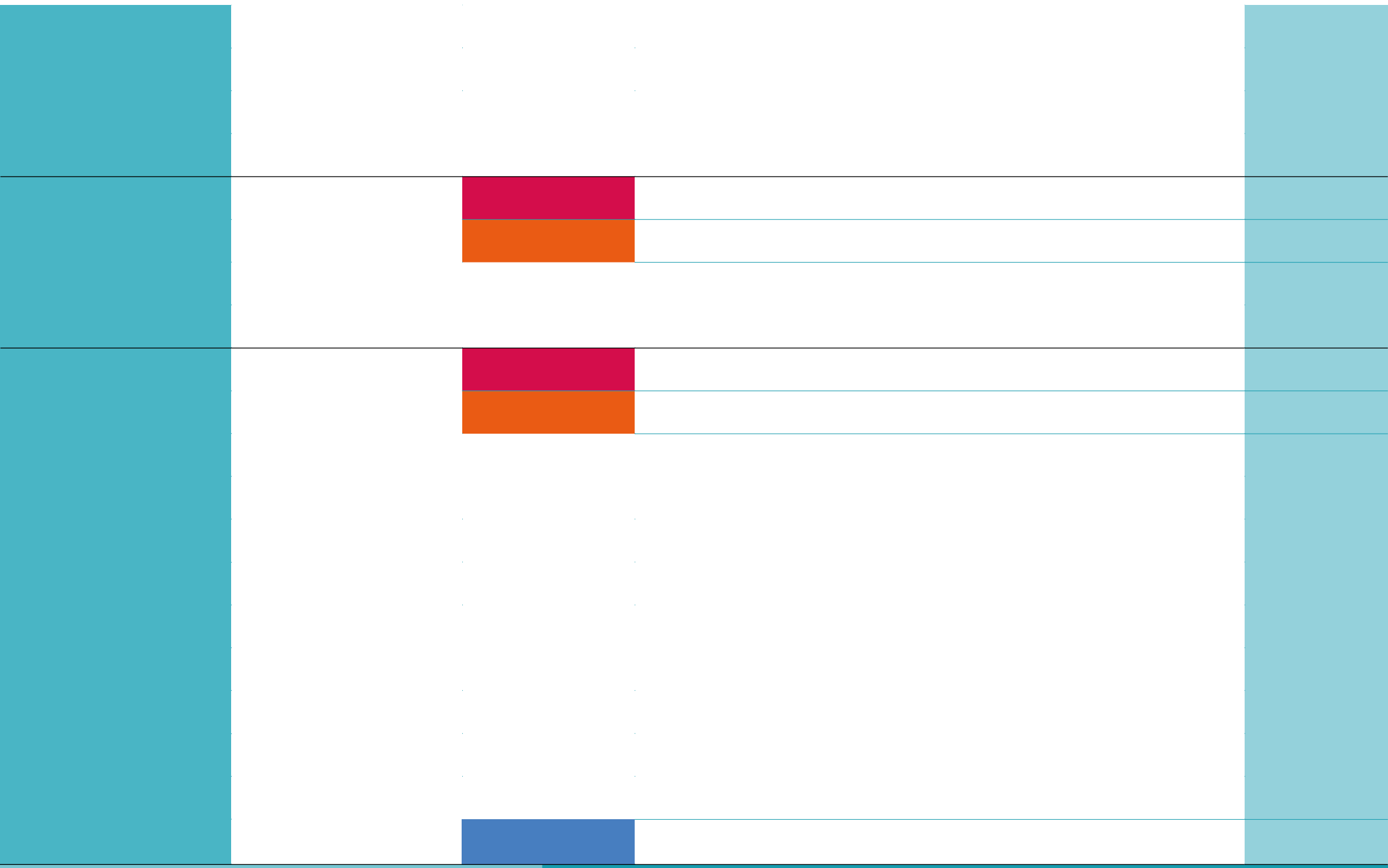
mechanism, expressing the need for visual communication in the design process	Reviewing existing products, expressing constructive feedback on other's work	Science
Planning for manufacture, establishing and using a design criteria to help focus and evaluate their work, utilising research to inform idea generation	Understanding that fabrics can be layered for effect, recognising the appearance and technique for different stitch types, including strength to reinforce joins	Science
Using more demanding practical skills (paper engineering/paper folding techniques); including traditional and digital net creation using computer-aided-design (CAD)	Using research and design criteria to develop ideas, determining the target audience, utilising computer-aided-design (CAD) to draw a box panel for the game	
	Using electrostatic energy to move objects in isolation as well as part of a system, cutting, measuring and joining various crafting materials	Maths
	Evaluating and adapting designs, experimenting with scientific theories to inform a design, listening and acting on constructive feedback gathered from others	
Reflecting on their project as it progresses, evaluating their own and other's final product	Understanding what static electricity is and how to generate it, knowing what a target audience is, constructing nets as part of a product to house a game	Art and design
Applying prior understanding and increasing knowledge of paper or card nets and structures; consolidating methods and techniques to improve stability and strength		Science
Designing and planning the style, shape and seams of a cushion, using pattern piece paper templates and models		
Sewing cross stitch and running stitch to join, complete seams, seal stuffing and add appliqué decorative elements, following specified design criteria		

Year 4	Unit description Pupils will...	Curriculum coverage The key strands are:	In this unit, the pupils will be...	Cross-curricular links
Food: Adapting a recipe (4 lessons) Go to unit	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.	**Design**	Reviewing existing products to inform design ideas, working within a set design brief	Science
		Make	Following but adapting an existing recipe, preparing food hygienically, creaming and combining ingredients to form a basic dough	
		Evaluate	Reflecting on and identifying flavours from a prototype, reviewing what aspects to change to improve the current recipe	
		Cooking and nutrition	Understanding the cost implications behind professional food preparation, altering a dough to be savoury or sweet, knowing to mix dry ingredients before combining with wet	
Structures: Pavilions (4 lessons) Go to unit	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.	**Design**	Exploring and designing within a given context or theme, aimed at a chosen target audience	Maths
		Make	Selecting from a range of materials and equipment to create frame structures, and to add aesthetic value	
		Evaluate	Discussing and reviewing existing pavilions and expo centres	
		Technical knowledge	Knowing what a pavilion is, building on prior knowledge of net structures and broadening knowledge of frames, know architects consider light, shadow and patterns when designing	
Textiles: Fastenings (4 lessons) Go to unit	Research different types of fabric fastenings before deciding which they want to use in their design for a book sleeve.	**Design**	Devising a list of design criteria, planning production, annotating isometric diagrams and sketches to further develop initial design ideas	Art and design
		Make	Selecting appropriate fastening types and equipment to sew, measuring and cutting fabric materials accurately	
		Evaluate	Researching and analysing methods of fastening fabric, determining the strength and use of each	
		Technical knowledge	Understanding stitches and fastenings and their pros and cons, knowing how to use pattern pieces to tessellate and save fabric as well as produce more accurate results	
Electrical systems: Torches (4 lessons) Go to unit	Be introduced to electricity and electrical safety before making a simple electric circuit to create a functioning torch.	**Design**	Designing for a chosen user-profile, identifying key properties (e.g. reflective, water resistant) of a material and utilising this knowledge to inform design ideas	Science
		Make	Making a functional, operational electrical series-circuit and housing this appropriately, selecting materials based on their characteristics	
		Evaluate	Reviewing and discussing existing torches, including use and the reasons behind the materials in their build	
		Technical knowledge	Identifying electrical components by name (e.g. bulb, cell), able to build a working electrical series-circuit and correct errors	
Mechanisms: Slingshot cars (4 lessons) Go to unit	Use kinetic energy to power slingshot cars, designing and making their own and then testing their effectiveness in time trials	**Design**	Developing designs following a list of design criteria, modelling and testing the launch chassis	Science
		Make	Selecting the materials and tools to measure, mark, cut and assemble accurately, using nets and tabs to design and make the car chassis	
		Evaluate	Testing products in time trials, comparing to other's designs, discussing and recording ways to improve the speed of the car, reviewing and learning about aerodynamic shapes in cars	
			Utilising car-part terminology (e.g. chassis), consolidating net and template creation, recognising key mechanisms as part of a product's key functionality	



Year 5	Unit description Pupils will...	Curriculum coverage The key strands are:	In this unit, the pupils will be...	Cross-curricular links
Food: What could be healthier? (4 lessons) Go to unit	Adapt a bolognese recipe by adding or altering ingredients and learn about the ethical and hygienic issues of food.	**Design**	Adapting an existing recipe,	Maths
		Make	Cutting, preparing and cooking vegetables and meat hygienically, using kitchen equipment such as knives, hot pans and hobs in a safe manner, recognising when meat is cooked	Computing
		Evaluate	Tasting and feeding back on existing pre-made bolognese sauces, suggesting substitute ingredients	
		Cooking and nutrition	Knowing where meat comes from and understand ethical issues around beef, identifying the nutritional values and contents on packaged food, making healthier ingredient swaps	
Mechanisms: Pop-up books (4 lessons) Go to unit	Utilise a range of mechanisms and construction techniques to create a pop up story book for younger children.	**Design**	Planning using storyboards and designs, communicating through annotated illustrations, identifying where and how the mechanisms will operate as part of the design	English
		Make	Making functional components, using layers and spacers to construct pages, cutting and assembling with accuracy	
		Evaluate	Revisiting and reflecting on progress at numerous points throughout the project	
		Technical knowledge	Consolidating knowledge on sliders, levers and linkages, identifying inputs and outputs, utilising methods of paper modelling and folding to improve resilience during use	
Textiles: Stuffed toys (4 lessons) Go to unit	Learn blanket stitch and then design and make 3D stuffed toys.	**Design**	Designing for a purpose, considering which techniques and materials to use, creating a paper pattern piece for the main body and individually for any additional components	Art and design
		Make	Selecting and using appropriate stitch types to join and attach materials depending on their properties	
		Evaluate	Comparing 3D object to 2D design, evaluating existing stuffed toys, identifying poor sewing technique and where possible rectifying it (e.g. to pull tighter, sew closer stitches)	
		Technical knowledge	Identifying methods of joining fabric effectively, running stitch, cross stitch and blanket stitch, knowing how to create a hidden seam and seal stuffing	
Electrical systems: Electric greetings cards (4 lessons) Go to unit	Explore electric circuits and apply this knowledge to design and make their own electric greetings cards.	**Design**	Applying scientific knowledge to generate design ideas, identifying the target audience, considering methods of incorporating the circuitry	Science
		Make	Selecting materials based on their properties (e.g. conductive, insulating), creating and incorporating a functional series-circuit concealing it inside the card	
		Evaluate	Experimenting with, and testing, series and parallel circuits to determine which would be fit for purpose as part of their design ideas	
		Technical knowledge	Drawing circuit diagrams and symbols, knowing the function of different circuit components, understanding the terminology: insulator, conductor, LED, battery	
Structures: Bridges (4 lessons) Go to unit	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 to destruction.	**Design**	Designing arch and truss bridges, modelling various methods of bridge-making	Science
		Make	Using triangulation for bracing, selecting appropriate tools and equipment such as saws and bench hooks to cut wood down to size and sandpaper to achieve a high quality finish	
		Evaluate	Testing through trial and error to evaluate the successful and unsuccessful functional properties of a design and its materials	
			Understanding the importance of compression and tension in bridge structures, establishing methods of reinforcing more complex structures to improve strength, stability and stiffness	

Year 6	Unit description Pupils will...	Curriculum coverage The key strands are:	In this unit, the pupils will be...	Cross-curricular links
Food: Come dine with me (4 lessons) Go to unit	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, from 'farm to fork'.	Design	Researching and reading recipe books to inspire and develop innovative recipes as part of a three-course meal, planning the methods and determining equipment required	PSHE
		Make	Working with food hygienically and safely, working to a time-scale, using a variety of cooking methods such as steaming, boiling and baking	Science
		Evaluate	Tasting, scoring and evaluating other's three-course meals	
Mechanisms: Automata toys (4 lessons) Go to unit	Develop their woodworking skills and explore cams to design and make mechanical window displays.	Cooking and nutrition	Understanding the risks of meat and fish when not cooked or stored properly, understanding the safe storage of meat and fish, designing a balanced three-course meal	
		Design	Drawing and annotating exploded and cross-sectional diagrams to illustrate ideas, modelling various cam shapes, generating design ideas based on a design brief	Maths
		Make	Measuring, marking and cutting woodwork accurately, selecting appropriate equipment, assembling components accurately to create a fully functional mechanical toy	
		Evaluate	Experimenting with cams to establish which movement is fit for purpose against their design ideas, investigating and discussing existing automata toys, checking accuracy of joints	
Textiles: Waistcoats (4 lessons) Go to unit	Learn how to measure, cut and assemble fabric to create a waistcoat. They will draw a design in accordance with their own design criteria.	Technical knowledge	Understanding the relationship between the cam, follower, axle, handle and topper, as part of a complete mechanism, creating a stable frame structure to support the mechanism	
		Design	Devising a list of design criteria, sketching and annotating design ideas on to a pattern piece and amending the measurements to suit their desired client	Art and design
		Make	Marking out, cutting and joining fabrics accurately, creating a consistent seam and attaching fastenings appropriately, applying decorative features such as appliqué	Maths
		Evaluate	Exploring existing products and considering the user, materials and shape, evaluating the final outcome against the design criteria and client's requirements and preferences	
		Technical knowledge	Knowing how to create hidden seams, accurate and consistent stitches, and secure fastenings	
Electrical systems: Steady hand games (4 lessons) Go to unit	Create electromagnetic toys and more complex electronic circuits to create a steady hand game.	Design	Generating ideas through sketching and discussion, modelling ideas through prototypes, establishing a list of design criteria	Science
		Make	Selecting and using appropriate materials and equipment, to cut, measure and mark accurately including the use of set-squares and rulers	
		Evaluate	Adapting products to improve functionality, testing that the product is fit for purpose and operates as planned against the design criteria	
		Technical knowledge	Creating and using electric series-circuits effectively, knowing how to make electromagnetic motors, creating nets for 3D shapes to house the circuitry and act as a stable base	
Structures: Playgrounds (4 lessons) Go to unit	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.	Design	Establishing and using list of design criteria, drawing a floor-plan diagram to demonstrate what apparatus they plan to create and where it will be positioned	Maths
		Make	Increasingly more demanding practical skills, selecting materials for their aesthetic and functional properties, make, strengthen and stiffen a range of structures	
		Evaluate	Evaluating and analysing existing and modelled playground structures, exploring different materials to achieve various textures, patterns and structures, reviewing other's work	
			Applying knowledge of construction techniques to realise design ideas, stabilising more complex structures using bracing, creating 3D shapes using custom nets	



KS2 Digital world

	Unit description Pupils will...	Curriculum coverage The key strands are:	In this unit, the pupils will be...	Cross-curricular links
Y3 Digital world: Electronic charm (4 lessons) Go to unit	Design, develop a program, house and promote a Micro:bit electronic charm to use in low-light conditions.	**Design**	Read a scenario and consider how a smart product could aid children walking at night. Develop design criteria to fulfill the need. Design 2D CAD display badges and mini stands.	Computing
		Make	Make a soft-foam pouch to house the microprocessor and LED screen for your flashing light to hang on a bag. Decorate the pouch to meet the design criteria.	
		Evaluate	Consider the impact of the digital revolution across a range of well-known products and the new wave of smart wearables.	
		Technical knowledge	Apply computing skills to develop a program that will provide a flashing light as part of a bag charm. Extend the program to automatically flash when the light levels drop too low.	
Y4 Digital world: Mindful moment timer (4 lessons) Go to unit	Explore what is meant by mindfulness and write design criteria to fulfil a brief to develop a programmed product for timing a mindful moment. Apply Computing knowledge and understanding to program a Micro: bit animal monitoring device. Develop 3D CAD skills by learning how to navigate the Tinkercad interface and essential tools to combine multiple objects.	**Design**	Research and write design criteria for a mindfulness moment timer. Develop a 2D computer-aided design brand logo.	Computing RSE & PSHE
		Make	Develop card prototype cases to house the microprocessor and LED screen of your timer, plus decorative features to fulfil the design criteria and theme.	
		Evaluate	Analyse existing timers to aid in planned mindfulness breaks, and consider how a programmed product could be tailored to your researched individual preferences.	
		Technical knowledge	Apply computing skills to program a timer, plus an optional LED pattern to indicate the timer has ran out and a reset button to start the timer again.	
Y5 Digital world: Monitoring devices (4 lessons) Go to unit		**Design**	Develop design criteria for a smart temperature monitor. Research animals to determine which species to design for and decide how the product will attach, stand and function. Learn new skills to create 3D computer-aided design virtual models.	Computing RSE & PSHE
		Make	Recognise the reason for the existence of plastic and why it now threatens our planets ecosystem. Repurpose toy building-bricks to model various product housing ideas.	
		Evaluate	Explore the invention, history and development of the thermometer. Understand the different applications that monitoring devices are used for today.	
		Technical knowledge	Apply computing skills to program and develop a monitor tailored to an animal of choice and alert the owner when the temperature is not optimum.	
Y6 Digital world Navigating the world (5 lessons) Go to unit	Design and program a navigation tool to produce a multifunctional device for trekkers using CAD 3D modelling software. Pitch and explain the product to a guest panel.	**Design**	Receive a client submission, write and develop a design brief and critiera to follow for developing a navigational tool. Continue developing 3D CAD skills to product a virtual model.	Computing English
		Make	Learn about different sustainable and unsustainable materials, consider the most appropriate functional properties as part of the product concept.	
		Evaluate	Reflect on new skills and determine whether your product concept, including material choices and 3D virtual model were successful against the client's needs through the brief and criteria.	
		Technical knowledge	Apply computing skills to program a combination of functions including compass and/or pedometer, plus any additional code learnt across the Y3-5 Digital world units to produce a smart navigation tool.	

Advice:

Our new Digital world units have a key focus on the Design and technology - National Curriculum technical knowledge objective to: apply their understanding of computing to program, monitor and control their products. This objective also touches upon objectives from the Computing National Curriculum (cross- curricular) but otherwise requires the children to recognise and justify where the program has formed part of a complete product and why they chose to use or adapt particular functions in the code - as stated in the D&T NC 'When designing and making, pupils should be taught to'. These units also touch upon the *design, make, evaluate* and other *technical knowledge* objectives as part of complete projects from beginning to end. Each unit has a development of skills using 2D to 3D computer-aided design programs to create graphics and virtual models.

Suggested plan for mixed-age groups: Keystage bracket - Two year cycle

See below for a suggested method of delivery for mixed-age classes/groups within the same keystage brackets: KS1, lower KS2 and upper KS2.

1st year cycle

KS1 (Y1/2 group)	Lower KS2 (Y3/4 group)	Upper KS2 (Y5/6 group)
Food: Fruit and vegetables (4 lessons)	Food: Eating seasonally (4 lessons)	Food: What could be healthier? (4 lessons)
Go to unit	Go to unit	Go to unit
Mechanisms: Moving story book (4 lessons)	Structures: Constructing a castle (4 lessons)	Mechanical systems: Pop-up book (4 lessons)
Go to unit	Go to unit	Go to unit
Structures: Constructing a windmill (4 lessons)	Textiles: Cushions (4 lessons)	Textiles: Stuffed toys (4 lessons)
Go to unit	Go to unit	Go to unit
Textiles: Puppets (4 lessons)	Digital world: Electronic charm (4 lessons)	Electrical systems: Greetings cards (4 lessons)
Go to unit	Go to unit	Go to unit
Mechanisms: Wheels and axles (4 lessons)	Mechanical systems: Pneumatic toys (4 lessons)	Structures: Bridges (4 lessons)
Go to unit	Go to unit	Go to unit

2nd year cycle

KS1 (Y1/2 group)	Lower KS2 (Y3/4 group)	Upper KS2 (Y5/6 group)
Food: A balanced diet (4 lessons)	Structures: Pavilions (4 lessons)	Food: Come dine with me (4 lessons)
Go to unit	Go to unit	Go to unit
Mechanisms: Moving monster (4 lessons)	Food: Adapting a recipe (4 lessons)	Mechanical systems: Automata toys (4 lessons)
Go to unit	Go to unit	Go to unit
Structures: Baby bear's chair (4 lessons)	Textiles: Fastenings (4 lessons)	Textiles: Waistcoats (4 lessons)
Go to unit	Go to unit	Go to unit
Textiles: Pouches (4 lessons)	Electrical systems: Torches (4 lessons)	Digital world: Navigating the world (4 lessons)
Go to unit	Go to unit	Go to unit
Mechanisms: Fairground wheel (4 lessons)	Mechanical systems: Slingshot car (4 lessons)	Structures: Playgrounds (4 lessons)
Go to unit	Go to unit	Go to unit