Design Technology at Crayke Primary

"Design is not just what it looks like and feels like. It is how it works."
Steve Jobs

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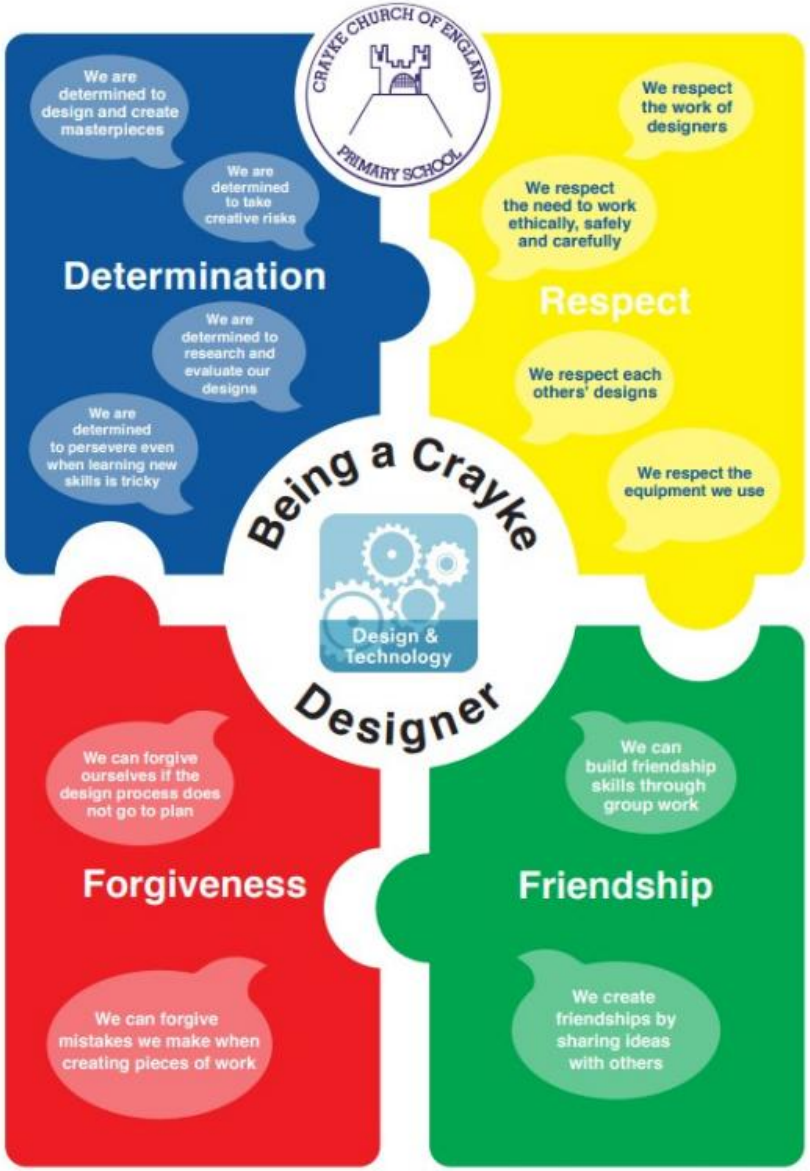
FOLLOW YOUR PATHWAY AND WE GROW TOGETHER WITH CONFIDENCE

You did not choose me, I chose you that you might ***go and bear fruit, fruit that will last*** *so that whatever you ask in my name the Father will give you.* John 15:16

Friendship Forgiveness Respect Determination

What does it mean to be a Crayke Designer?

"Design is not just what it looks like and feels like. It is how it work." Steve Jobs



- We use Kapow (a National Curriculum fully aligned specialist scheme) which splits Design Technology into four strands: Design, Make, Evaluate and Technical Knowledge.
- This is further divided into six areas to fully develop children's design skills and knowledge: Cooking and Nutrition, Textiles, Structures, Mechanisms/ Mechanical Systems. In KS2 this is extended to include Electrical Systems and Digital World.
- Teachers adapt Kapow units to fit our thematic approach and ensure that there is appropriate coverage of the requirements of the National Curriculum, within the bounds of our two-year rolling programme due to our mixed-age classes.
- The sequencing and progression of different design skills and knowledge is also mapped throughout our curriculum to ensure links over time and across subjects. We provide children with different opportunities and contexts in which to build their knowledge and understanding.

•Where appropriate, we block learning in order to immerse children fully. Where relevant and possible, we offer enrichment activities to motivate, excite and inspire pupils.

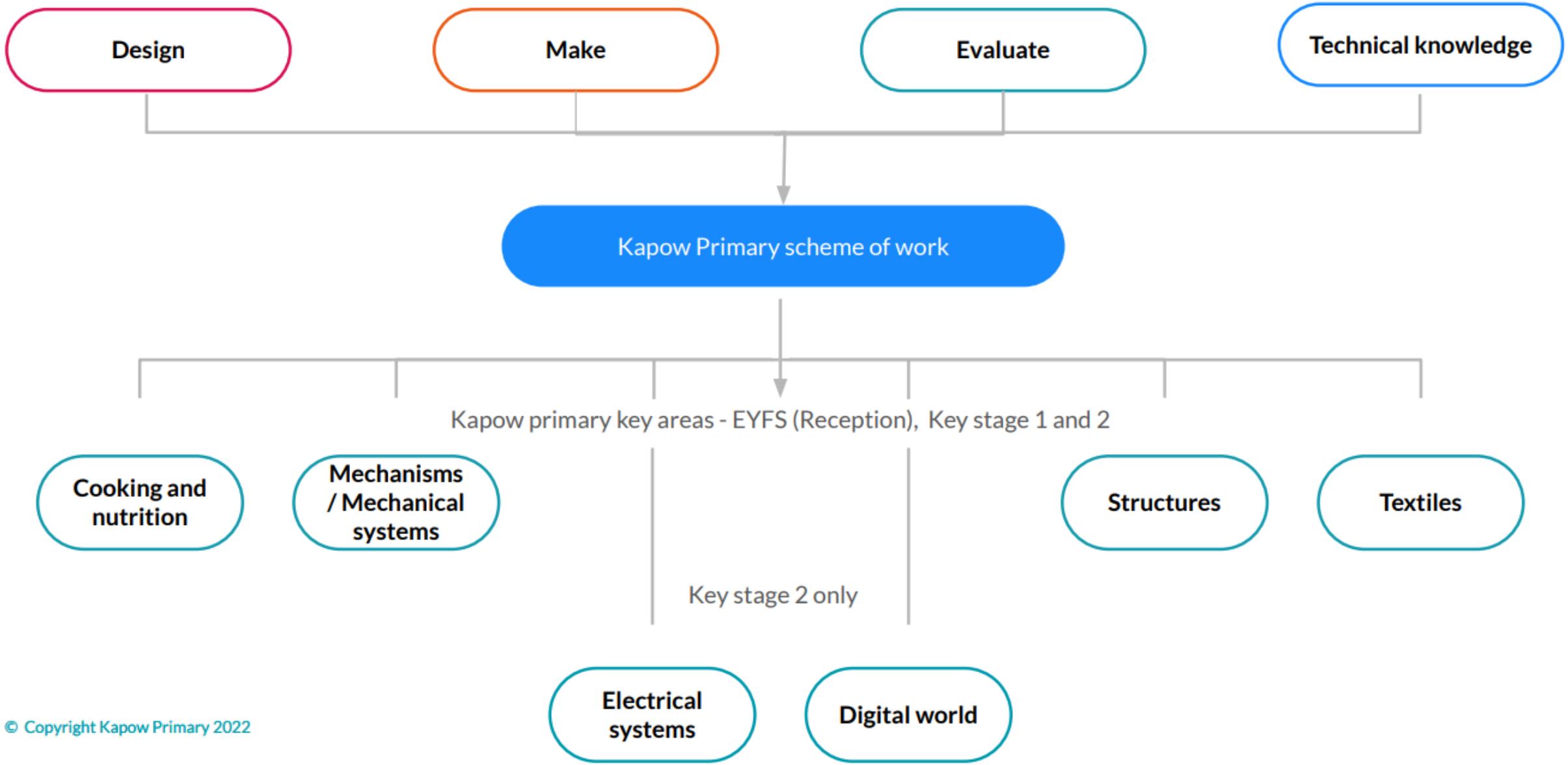
•We follow our lesson structure making connections and spotting values through our DT lessons. Creatively produced DT books give children a sense of pride in the presentation of their work.

Impact will be measured by assessing against the Kapow statements through 'Insight pupil tracking' as:
Below
Just below
On track

Subject Leaders	Emily Walker and Caroline Helfferich
Link Governor	N/A
CPD	Kapow

Overview of Design Technology

Kapow Primary offers full coverage of the KS1 and KS2 Design and technology curriculum and we have categorised our content into six areas, with four strands that run throughout:



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DT Long Term Plan Year A 2026-27

Year A	Apple	Beech	Holly	Oak
Autumn	Seasonal: Activities Hibernation Boxes	Cooking and Nutrition: Fruit and Vegetables	Mechanical Systems: Pneumatic Toys	Textiles: Stuffed Toys (Linked to Child's War theme)
	Structures: Junk Modelling	Mechanisms: Making a Moving Storybook	Digital World: Electronic Charm	Structures: Bridges (Linked to Child's War theme)
Spring	Textiles: Bookmarks	Structures: Constructing a Windmill	Cooking and Nutrition: Eating Seasonally	Electrical Systems: Doodlers
	Cooking and Nutrition: Soup	Textiles: Puppets	Structures: Constructing A Castle	Cooking And Nutrition: What Could Be Healthier? (Linked to Tuscany theme)
Summer	Seasonal Activities: Design & Make A Rainbow Salad	Mechanisms: Wheels And Axles	Textiles: Cushions	Digital World: Monitoring Devices
	Structures: Boats	Time to extend/ celebrate/ challenge	Electrical Systems: Electric Poster	Mechanical Systems: Making a Pop-Up Book (Linked to Book of Life theme)

DT Long Term Plan Year B 2027-28

Year B	Apple	Beech	Holly	Oak
Autumn	Seasonal: Activities Hibernation Boxes	Structures: Creating a Throne (History link to Monarchy)	Cooking & Nutrition: Adapting a Recipe (Science link to changing states)	Mechanical Systems: Automata toys (linking to Ancient Greeks theme)
	Structures: Junk Modelling	Mechanisms: Making a Moving Dragon (English link to key texts)	Structures: Pavilions (Science link to habitats)	Cooking & Nutrition: Come Dine With Me (linking to Greece theme)
Spring	Textiles: Bookmarks	Cooking and Nutrition: A Balanced Diet (Science link to Nutrition)	Electrical Systems: Torches (English link to key texts)	Structure: Playgrounds
	Cooking & Nutrition: Soup	Mechanisms: Fairground Wheel (Science link to seaside theme)	Mechanical Systems: Slingshot Car (Science link to Forces)	Electrical Systems: Steady Hand Game
Summer	Seasonal Activities: Design & Make A Rainbow Salad	Textiles: Pouches	Textiles: Fastenings (History link to Ancient Egyptians)	Textiles: Waistcoats (linking to play)
	Structures: Boats	Time to extend/ celebrate/ challenge	Digital World: Mindful Moments Timer (PSHCE link to class transition)	Digital World: Navigating the World (link to Journeys theme)

Progression in Design Technology at Crayke Primary

Our Curriculum – how does it progress from Early Years to Key Stage 3?

•Apple Class in EYFS follow the Early Learning Goals. The Early Years curriculum map, has been devised to feed into the Key Stage 1 curriculum.

•Key Stage 1 units have been planned to provide opportunities for building on EYFS skills and preparation for KS2.

•Our Key Stage 2 units have been arranged with opportunities to allow children to build on the knowledge and skills they have acquired thus far and to apply it to new contexts.

•Units of work come from Kapow specialist DT scheme and have been built to link to termly themes where appropriate, alongside the National Curriculum objectives.

•As they move into Key Stage 3, pupils should be taught to develop their creativity, ideas and increase proficiency in their execution. They should develop a critical understanding of design, master practical skills, design, make, evaluate and improve as well as take inspiration from design throughout history.

Links to Early Years Outcomes

Early years outcomes in Kapow Primary's units

Early Years Foundation Stage (Reception) Kapow Primary's units	Early years outcomes: Prime Areas **Development Matters 2021 statements** Early Learning Goals	Early years outcomes: Specific Areas **Development Matters 2021 statements** Early Learning Goals	Characteristics of effective learning
Structures: Junk modelling	**Physical development** -Develop small motor skills so that they can use a range of tools competently, safely and confidently. -ELG: Fine Motor Skills> Use a range of small tools, including scissors, paint brushes and cutlery.	**Expressive Arts and Design** -Explore, use and refine a variety of artistic effects to express ideas and feelings. -Return to and build on their previous learning, refining ideas and developing their ability to represent them. -Create collaboratively, sharing ideas, resources and skills. -ELG: Creating with materials> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. -ELG: Creating with materials> Share their creations, explaining the process they have used.	✓ Playing and exploring ✓ Active learning ✓ Creating and thinking critically
Food: Soup	**Communication and language** -Learn new vocabulary. -Use new vocabulary throughout the day. -ELG: Speaking> Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. **Personal, social and emotional development** -Know and talk about the different factors that support their overall health and wellbeing: healthy eating. -ELG: Managing self> Manage their own basic hygiene and personal needs, including… understanding the importance of healthy food choices. **Physical development** -Develop small motor skills so that they can use a range of tools competently, safely and confidently. -ELG: Use a range of small tools, including scissors, paint brushes and cutlery.	**Understanding the world** -Explore the natural world around them. -ELG: The Natural World>Explore the natural world around them, making observations and drawing pictures of animals and plants. **Expressive Arts and Design** -Explore, use and refine a variety of artistic effects to express ideas and feelings. -ELG: Creating with materials> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	✓ Playing and exploring ✓ Active learning

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Links to Early Years Outcomes

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Early Years Foundation Stage (Reception) Kapow Primary's units	Early years outcomes: Prime Areas **Development Matters 2021 statements** Early Learning Goals	Early years outcomes: Specific Areas **Development Matters 2021 statements** Early Learning Goals	Characteristics of effective learning
Textiles: Bookmarks	**Physical development** -Develop small motor skills so that they can use a range of tools competently, safely and confidently. -ELG: Fine Motor Skills> Use a range of small tools, including scissors, paint brushes and cutlery.	**Expressive Arts and Design** -Explore, use and refine a variety of artistic effects to express ideas and feelings. -Return to and build on their previous learning, refining ideas and developing their ability to represent them. -ELG: Creating with materials> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. -ELG: Creating with materials> Share their creations, explaining the process they have used.	✓ Playing and exploring ✓ Active learning ✓ Creating and thinking critically
Structures: Boats	**Communication and language** -Articulate their ideas and thoughts in well-formed sentences. -Connect one idea or action to another using a range of connectives. -Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. -ELG: Speaking> Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. -ELG: Speaking> Offer explanations for why things might happen.	**Understanding the world** -Explore the natural world around them. -ELG: The Natural World>Explore the natural world around them, making observations and drawing pictures of animals and plants. **Expressive Arts and Design** -Explore, use and refine a variety of artistic effects to express ideas and feelings. -ELG: Creating with materials> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. -ELG: Creating with materials> Share their creations, explaining the process they have used.	✓ Playing and exploring ✓ Active learning ✓ Creating and thinking critically

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Bridging EYFS and Key Stage 1 – Design Technology

Design Technology

Organisation of knowledge	Design	Make	Evaluate	Structures	Food
Relevant ELG	**ELG: Listening, Attention and Understanding** - Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. **ELG: Speaking** - Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. **ELG: Self-Regulation** - Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate.	**ELG: Creating with Materials** - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. **ELG: Managing self** - Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. **ELG: Fine motor skills** - Use a range of small tools, including scissors, paintbrushes and cutlery. **ELG: Creating with Materials** - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. - Share their creations, explaining the process they have used.	**ELG: Listening, Attention and Understanding** - Hold conversation when engaged in back-and-forth exchanges with their teacher and peers. **ELG: Speaking** - Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. **ELG: Speaking** - Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher. **ELG: Managing self** - Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. **ELG: Creating with Materials** - Share their creations, explaining the process they have used.		**ELG: Managing self** - Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. - Set and work towards simple goals, being able to wait for what they want and control their immediate impulses when appropriate. **ELG: Fine motor skills** - Use a range of small tools, including scissors, paint brushes and cutlery.
KS1 readiness objectives	• To describe something they want to make / build / construct • To say who they are making / building / constructing for • To talk about what materials they are going to use when making / building / constructing	• To make / build / construct objects using a variety of materials • To join materials together when making / building / constructing	• To talk about their constructions / products, and what they are pleased with • To talk about their constructions and say how it could be even better • To talk about everyday objects that they like and say why they are good	• To build / construct structures from a range of materials to a design brief that they have created or been given. • To build / construct structures that are tall or strong. • To know that tape and glue can join materials together and can make structures stronger.	• To recognise different foods as either healthy or unhealthy • To know how to use basic cutlery and utensils to make and eat food • To follow simple instructions to make different foods • To know when we make food for other people that it needs to be appealing.

EYFS to Key Stage 1 Progression: Textiles

		EYFS: Reception	Year 1/2	
		Bookmarks	Cycle A: Puppets	Cycle B: Pouches
Skills	Design	• Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials.	• Using a template to create a design for a puppet.	• Designing a pouch.
	Make	• Developing fine motor/cutting skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading.	• Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing the steps taken during construction.	• Selecting and cutting fabrics for sewing. • Decorating a pouch using fabric glue or running stitch. • Threading a needle. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. • Neatly pinning and cutting fabric using a template.
	Evaluate	• Reflecting on a finished product and comparing to their design.	• Reflecting on a finished product, explaining likes and dislikes.	• Troubleshooting scenarios posed by the teacher. • Evaluating the quality of the stitching on others' work. • Discussing as a class the success of their stitching against the success criteria. • Identifying aspects of their peers' work that they particularly like and explaining why.
Knowledge		• To know that a design is a way of planning our idea before we start. • To know that threading is putting one material through an object.	• To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples. glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. • To know that drawing a design idea is useful to see how an idea will look.	• To know that sewing is a method of joining fabric. • To know that different stitches can be used when sewing. • To understand the importance of tying a knot after sewing the final stitch. • To know that a thimble can be used to protect my fingers when sewing.

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Key Stage 2 Progression: Textiles

		Year 3/4	
		Cycle A: Cross-stitch and appliqué Cushions or Egyptian collars	**Cycle B: Fastenings**
Skills	**Design**	• Designing and making a template from an existing cushion and applying individual design criteria.	• Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve.
	Make	• Following design criteria to create a cushion or Egyptian collar. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with stuffing and sewing the edges (Cushions) ***or*** embellishing the collars based on design ideas (Egyptian collars).	• Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric. • Working neatly by sewing small, straight stitches. • Incorporating a fastening to a design.
	Evaluate	• Evaluating an end product and thinking of other ways in which to create similar items.	• Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement. • Articulating the advantages and disadvantages of different fastening types.
Knowledge		•To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. •To know that when two edges of fabric have been joined together it is called a seam. •To know that it is important to leave space on the fabric for the seam. •To understand that some products are turned inside out after sewing so the stitching is hidden.	• To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. • To know that different fastening types are useful for different purposes. • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.

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Key Stage 2 Progression: Textiles

		Year 5/6	
		Cycle A: Stuffed toys	**Cycle B: Waistcoats**
Skills	**Design**	• Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components.	• Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions.
	Make	• Creating a 3D stuffed toy from a 2D design. • Measuring, marking and cutting fabric accurately and independently . • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. • Using appliqué to attach pieces of fabric decoration. • Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular.	• Using a template when cutting fabric to ensure they achieve the correct shape. • Using pins effectively to secure a template to fabric without creases or bulges. • Marking and cutting fabric accurately, in accordance with their design. • Sewing a strong running stitch, making small, neat stitches and following the edge. • Tying strong knots. • Decorating a waistcoat, attaching features (such as appliqué) using thread. • Finishing the waistcoat with a secure fastening (such as buttons). • Learning different decorative stitches. • Sewing accurately with evenly spaced, neat stitches.
	Evaluate	• Testing and evaluating an end product and giving point for further improvements.	• Reflecting on their work continually throughout the design, make and evaluate process.
Knowledge		• To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.	• To understand that it is important to design clothing with the client/ target customer in mind. • To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric. • To understand the importance of consistently sized stitches.

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EYFS Progression: Structures

		EYFS (Reception)	
		Junk modelling	Boats
Skills	Design	• Making verbal plans and material choices. • Developing a junk model.	• Designing a junk model boat. • Using knowledge from exploration to inform design.
	Make	• Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together.	• Making a boat that floats and is waterproof, considering material choices.
	Evaluate	• Giving a verbal evaluation of their own and others' junk models with adult support. • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model.	• Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves.
Knowledge	Technical	• To know there are a range to different materials that can be used to make a model and that they are all slightly different. • Making simple suggestions to fix their junk model.	• To know that 'waterproof' materials are those which do not absorb water.
	Additional		• To know that some objects float and others sink. • To know the different parts of a boat.

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Key Stage 1 Progression: Structures

		Year 1/2	
		Cycle A: Constructing a windmill	**Cycle B: Baby bear's chair** * Adapted: Create a Throne
Skills	**Design**	• Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design.	• Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects.
	Make	• Making stable structures from card, tape and glue . • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure.	• Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper.
	Evaluate	• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • Suggest points for improvements.	• Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.
Knowledge	**Technical**	• To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together.	• To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily.
	Additional	• To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets the clients needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure.	• To know that natural structures are those found in nature. • To know that man-made structures are those made by people.

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Key Stage 2 Progression: Structures

		Year 3/4	
		Cycle A: Constructing a castle	**Cycle B: Pavilions**
Skills	**Design**	• Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software.	• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight.
	Make	• Constructing a range of 3D geometric shapes using nets . • Creating special features for individual designs. • Making facades from a range of recycled materials.	• Creating a range of different shaped frame structures. • Making a variety of free standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials.
	Evaluate	• Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs.	• Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs.
Knowledge	**Technical**	• To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures.	• To understand what a frame structure is • To know that a 'free-standing' structure is one which can stand on its own
	Additional	• To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product.	• To know that a pavilion is a a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects consider light, shadow and patterns when designing.

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Key Stage 2 Progression: Structures

		Year 5/6	
		Cycle A: Bridges	**Cycle B: Playgrounds**
Skills	Design	• Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation.	• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
	Make	• Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support a load. • Building a wooden bridge structure. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks. • Using the correct techniques to saws safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriating materials is an important part of the design process. • Understanding basic wood functional properties.	• Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures.
	Evaluate	• Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others.	• Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure.
Knowledge	Technical	• To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood.	• To know that structures can be strengthened by manipulating materials and shapes.
	Additional	• To understand the difference between arch, beam, truss and suspension bridges. • To understand how to carry and use a saw safely.	• To understand what a 'footprint plan' is. • To understand that in the real world, design , can impact users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.

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Key Stage 1 Progression: Mechanisms/ Mechanical Systems

		Year 1/2 cycle A		*Adapted: Make a moving dragon Year 1/2 cycle B	
		Making a moving storybook	Wheels and axles	Making a moving monster	Fairground wheel
Skills	Design	• Explaining how to adapt mechanisms, using bridges or guides to control the movement. • Designing a moving story book for a given audience.	• Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement.	• Selecting a suitable linkage system to produce the desired motion. • Designing a wheel.	• Creating a class design criteria for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criteria.
	Make	• Following a design to create moving models that use levers and sliders.	• Adapting mechanisms, when: • they do not work as they should. • to fit their vehicle design. • to improve how they work after testing their vehicle.	• Selecting materials according to their characteristics. • Following a design brief.	• Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly.
	Evaluate	• Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience.	• Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.	• Evaluating different designs. • Testing and adapting a design.	• Evaluating own designs against design criteria. • Using peer feedback to modify a final design.
Knowledge	Technical	• To know that a mechanism is the parts of an object that move together. •To know that a slider mechanism moves an object from side to side. • To know that a slider mechanism has a slider, slots , guides and an object. • To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.	• To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle. • To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced.	• To know that different materials have different properties and are therefore suitable for different uses.	• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers.
	Additional	• To know that in Design and technology we call a plan a 'design'.	• To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.	• To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. • To know that it is important to test my design as I go along so that I can solve any problems that may occur.	• To know some real-life objects that contain mechanisms.

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Key Stage 2 Progression: Mechanisms/ Mechanical Systems

		Year 3/4	
		Cycle A: Pneumatic toys	**Cycle B: Making a slingshot car**
Skills	**Design**	• Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly.	• Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design.
	Make	• Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving.	• Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design.
	Evaluate	• Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.	• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.
Knowledge	**Technical**	• To understand how pneumatic systems work. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by drawing in, releasing and compressing air.	• To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance..
	Additional	• To understand how sketches, drawings and diagrams can be used to communicate design ideas. • To know that exploded-diagrams are used to show how different parts of a product fit together. • To know that thumbnail sketches are small drawings to get ideas down on paper quickly.	• To understand that products change and evolve over time. • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something. •To know that it is important to assess and evaluate design ideas and models against a list of design criteria.

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Key Stage 2 Progression: Mechanisms/ Mechanical Systems

		Year 5/6	
		Cycle A: Making a pop up book	**Cycle B: Automata toys**
Skills	Design	• Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.	•Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement. • Understanding how linkages change the direction of a force. • Making things move at the same time. • Understanding and drawing cross-sectional diagrams to show the inner-workings of my design.
	Make	• Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.	• Measuring, marking and checking the accuracy of the jelutong and dowel pieces required. • Measuring, marking and cutting components accurately using a ruler and scissors. • Assembling components accurately to make a stable frame. • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles. • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set.
	Evaluate	• Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.	• Evaluating the work of others and receiving feedback on own work. • Applying points of improvement to their toys. • Describing changes they would make/do if they were to do the project again.
Knowledge	Technical	• To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms.	• To understand that the mechanism in an automata uses a system of cams, axles and followers. • To understand that different shaped cams produce different outputs.
	Additional	• To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	• To know that an automata is a hand powered mechanical toy. • To know that a cross-sectional diagram shows the inner workings of a product. • To understand how to use a bench hook and saw safely. • To know that a set square can be used to help mark 90° angles.

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Key Stage 1 Progression: Cooking and Nutrition

		EYFS (Reception)	Year 1/2	
		Soup	Cycle A: Fruit and vegetables	Cycle B: A balanced diet
Skills	Design	• Designing a soup recipe as a class. • Designing soup packaging.	• Designing smoothie carton packaging by-hand or on ICT software.	• Designing a healthy wrap based on a food combination which works well together.
	Make	• Chopping plasticine safely. • Chopping vegetables with support.	• Chopping fruit and vegetables safely to make a smoothie. • Identifying if a food is a fruit or a vegetable. • Learning where and how fruits and vegetables grow.	• Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief.
	Evaluate	• Tasting the soup and giving opinions. • Describing some of the following when tasting food: look, feel, smell and taste. • Choosing their favourite packaging design and explaining why.	• Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.	• Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating which grip was most effective.
Knowledge		• To know that soup is ingredients (usually vegetables and liquid) blended together. • To know that vegetables are grown. • To recognise and name some common vegetables. • To know that different vegetables taste different. • To know that eating vegetables is good for us. • To discuss why different packages might be used for different foods.	• Understanding the difference between fruits and vegetables. • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	• To know that 'diet' means the food and drink that a person or animal usually eats. • To understand what makes a balanced diet. • To know where to find the nutritional information on packaging. • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group. • To know that nutrients are substances in food that all living things need to make energy, grow and develop. • To know that 'ingredients' means the items in a mixture or recipe. • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy. • To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.

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Key Stage 2 Progression: Cooking and Nutrition

		Year 3/4	
		Cycle A: Eating seasonally	**Cycle B: Adapting a recipe**
Skills	**Design**	• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.	• Designing a biscuit within a given budget, drawing upon previous taste testing judgements.
	Make	• Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Following the instructions within a recipe.	• Following a baking recipe, from start to finish, including the preparation of ingredients. • Cooking safely, following basic hygiene rules. • Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).
	Evaluate	• Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.	• Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of food products. • Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins.).
Knowledge		• To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To understand that imported foods travel from far away and this can negatively impact the environment. • To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits.	• To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that it is important to use oven gloves when removing hot food from an oven. • To know the following cooking techniques: sieving, creaming, rubbing method, cooling. •To understand the importance of budgeting while planning ingredients for biscuits.

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Key Stage 2 Progression: Cooking and Nutrition

		Year 5/6	
		Cycle A: What could be healthier?	**Cycle B: Come dine with me**
Skills	Design	• Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe.	• Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken.
	Make	• Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe.	• Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence.
	Evaluate	• Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.	• Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Taste testing and scoring final products. • Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. • Evaluating health and safety in production to minimise cross contamination.
Knowledge		• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues. • To know that I can adapt a recipe to make it healthier by substituting ingredients. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.	• To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).

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Key Stage 2 Progression: Electrical Systems (KS2 only)

		Year 3/4	
		Cycle B: Electric poster	**Cycle B: Torches**
Skills	Design	• Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. • Generate a final design for the electric poster with consideration to the client's needs and design criteria. • Design an electric poster that fits the requirements of a given brief. • Plan the positioning of the bulb (circuit component) and its purpose.	• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.
	Make	• Create a final design for the electric poster. • Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. • Measure and mark materials out using a template or ruler. • Fit an electrical component (bulb). • Learn ways to give the final product a higher quality finish (e.g. framing to conceal a roughly cut edge).	• Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria.
	Evaluate	• Learning to give and accept constructive criticism on own work and the work of others. • Testing the success of initial ideas against the design criteria and justifying opinions. • Revisiting the requirements of the client to review developing design ideas and check that they fulfil their needs.	• Evaluating electrical products. • Testing and evaluating the success of a final product.
Knowledge	Technical	• To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. • To understand common features of an electric product (switch, battery or plug, dials, buttons etc.). • To list examples of common electric products (kettle, remote control etc.). • To understand that an electric product uses an electrical system to work (function). • To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits.	• To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit.
	Additional	• To understand the importance and purpose of information design. • To understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached).	• To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.

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Key Stage 2 Progression: Electrical Systems (KS2 only)

		Year 5/6	
		Cycle A: Doodlers	**Cycle B: Steady hand game**
Skills	**Design**	• Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user.	• Designing a steady hand game - identifying and naming the components required. • Drawing a design from three different perspectives. • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. • Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'.
	Make	• Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product.	• Constructing a stable base for a game. • Accurately cutting, folding and assembling a net. • Decorating the base of the game to a high quality finish. • Making and testing a circuit. • Incorporating a circuit into a base.
	Evaluate	• Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product.	• Testing own and others finished games, identifying what went well and making suggestions for improvement. • Gathering images and information about existing children's toys. • Analysing a selection of existing children's toys.
Knowledge	**Technical**	• To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off. • To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. • To know a motorised product is one which uses a motor to function.	• To know that batteries contain acid, which can be dangerous if they leak. • To know the names of the components in a basic series circuit, including a buzzer.
	Additional	• To know that product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged.	•To know that 'form' means the shape and appearance of an object. •To know the difference between 'form' and 'function'. •To understand that 'fit for purpose' means that a product works how it should and is easy to use. • To know that form over purpose means that a product looks good but does not work very well. • To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. • To understand the diagram perspectives 'top view', 'side view' and 'back'.

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Key Stage 2 Progression: Digital World (KS2 only)

		*Adapted: Electronic Charm Year 3/4	
		Cycle A: Wearable technology	**Cycle B: Mindful moments timer**
Skills	**Design**	• Problem solving by suggesting which features on a micro:bit might be useful and justifying my ideas. • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. • Developing design ideas through annotated sketches to create a product concept. • Developing design criteria to respond to a design brief.	• Writing design criteria for a programmed timer (micro:bit). • Exploring different mindfulness strategies. • Applying the results of my research to further inform my design criteria. • Developing a prototype case for my mindful moment timer. • Using and manipulating shapes and clipart by using computer-aided design (CAD), to produce a logo. • Following a list of design requirements.
	Make	• Following a list of design requirements. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.	• Developing a prototype case for my mindful moment timer. • Creating 3D structures using modelling materials. • Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press.
	Evaluate	• Analysing and evaluating wearable technology. • Using feedback from peers to improve design.	• Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages. • Evaluating my micro:bit program against points on my design criteria and amending them to include any changes I made. • Documenting and evaluating my project. • Understanding what a logo is and why they are important in the world of design and business. • Testing my program for bugs (errors in the code). • Finding and fixing the bugs (debug) in my code. • Using an exhibition to gather feedback. • Gathering feedback from the user to make suggested improvements to a product.
Knowledge	**Technical**	• To understand that, in programming, a 'loop' is code that repeats something again and again until stopped. • To know that a micro:bit is a pocket-sized, codeable computer. • To know that a simulator is able to replicate the functions of an existing piece of technology.	• To understand what variables are in programming. • To know some of the features of a micro:bit. • To know that an algorithm is a set of instructions to be followed by the computer. • To know that it is important to check my code for errors (bugs). • To know that a simulator can be used as a way of checking your code works before installing it onto an electronic device.
	Additional	•To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'. • To know what a focus group is by taking part in one.	•To understand the terms 'ergonomic' and 'aesthetic'. •To know that a prototype is a 3D model made out of cheap materials, that allows us to test design ideas and make better decisions about size, shape and materials. • To know that an exhibition is a way for companies to showcase products, meet potential new customers and gather feedback from users.

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Key Stage 2 Progression: Digital World (KS2 only)

		Year 5/6	
		Cycle A: Monitoring devices	**Cycle B: Navigating the world**
Skills	**Design**	• Researching (books, internet) for a particular (user's) animal's needs. • Developing design criteria based on research. • Generating multiple housing ideas using building bricks. • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD.	• Writing a design brief from information submitted by a client. • Developing design criteria to fulfil the client's request. • Considering and suggesting additional functions for my navigation tool. • Developing a product idea through annotated sketches. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD.
	Make	• Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range.	• Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). • Explaining material choices and why they were chosen as part of a product concept. • Programming an N,E, S, W cardinal compass.
	Evaluate	• Stating an event or fact from the last 100 years of plastic history. • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. • Explaining key functions in my program (audible alert, visuals). • Explaining how my product would be useful for an animal carer including programmed features.	• Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Developing an awareness of sustainable design. • Identifying key industries that utilise 3D CAD modelling and explaining why. • Describing how the product concept fits the client's request and how it will benefit the customers. • Explaining the key functions in my program, including any additions. • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. • Demonstrating a functional program as part of a product concept pitch.
Knowledge	**Technical**	• To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. • To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. • To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.	• To know that accelerometers can detect movement. • To understand that sensors can be useful in products as they mean the product can function without human input.
	Additional	• To understand key developments in thermometer history. • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. • To know the 6Rs of sustainability. • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.	• To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request. • To know that 'multifunctional' means an object or product has more than one function. • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.

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Vocabulary Progression in Design Technology

Design and technology vocabulary

EYFS Reception

Food: Soup

- Fruit
- Vegetables
- Safety
- Knife
- Blade
- Tool
- Edge
- Handle
- Chop
- Slice
- Cut
- Saucepan
- Blender
- Chopping board
- Hob
- Boil
- Blend
- Mix
- Packaging
- Recyclable
- Metal
- Plastic
- Reusable

Structures: Junk modelling

- Join
- Stick
- Cut
- Bend
- Slot
- Scissors
- Measure
- Materials
- Fix

Textiles: Bookmarks

- Thread
- Weave
- Pattern
- Sew
- Sewing needle
- Embroider
- Design
- Evaluate

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Vocabulary Progression in Design Technology

Design and technology vocabulary



EYFS | **Reception**

Structures:
Boats

- Waterproof
- Absorb
- Prediction
- Variable
- Experiment
- Investigation
- Float
- Sink
- Junk

Notes:

Additional vocabulary will also be taught and explored through child-led learning and continuous provision opportunities including within Forest School.

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Vocabulary Progression in Design Technology

Design and technology vocabulary



KS1 | Year 1

Mechanisms: Making a moving story book

- Assemble
- Design
- Evaluation
- Mechanism
- Model
- Sliders
- Stencil
- Target audience
- Template
- Test

Structures: Constructing a windmill

- Client
- Design
- Evaluation
- Net
- Stable
- Strong
- Test
- Weak
- Windmill

Textiles: Puppets

- Decorate
- Design
- Fabric
- Glue
- Model
- Hand puppet
- Safety pin
- Staple
- Stencil
- Template

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS1 | Year 1

Mechanisms: Wheels and axles	Food: Fruit and vegetables	Notes:
• Axle • Axle holder • Chassis • Design • Evaluation • Fix • Mechanic • Mechanism • Model • Test • Wheel	• Blender • Carton • Fruit • Healthy • Ingredients • Peel • Peeler • Recipe • Slice • Smoothie • Stencil • Template • Vegetable	Additional specific vocabulary that links to adaptations to fit our themes can be found on Knowledge Organisers and Medium Term Plans for each unit.

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS1 | Year 2

Food: A balanced diet

- Alternative
- Diet
- Balanced diet
- Evaluation
- Expensive
- Healthy
- Ingredients
- Nutrients
- Packaging
- Refrigerator
- Sugar
- Substitute

Mechanisms: Making a moving monster

- Evaluation
- Input
- Lever
- Linear motion
- Linkage
- Mechanical
- Mechanism
- Motion
- Oscillating motion
- Output
- Pivot
- Reciprocating motion
- Rotary motion
- Survey

Structures: Baby bear's chair

- Function
- Man-made
- Mould
- Natural
- Stable
- Stiff
- Strong
- Structure
- Test
- Weak

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS1 | Year 2

Textiles: Pouches

- Accurate
- Fabric
- Knot
- Pouch
- Running-stitch
- Sew
- Shape
- Stencil
- Template
- Thimble

Mechanisms: Fairground wheel

- Axle
- Decorate
- Evaluation
- Ferris wheel
- Mechanism
- Stable
- Strong
- Test
- Waterproof
- Weak

Notes:

Additional specific vocabulary that links to adaptations to fit our themes can be found on Knowledge Organisers and Medium Term Plans for each unit.

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 3

Food: Eating seasonally

- Climate
- Dry climate
- Exported
- Imported
- Mediterranean climate
- Nationality
- Nutrients
- Polar climate
- Recipe
- Seasonal food
- Seasons
- Temperate climate
- Tropical climate

Structures: Constructing a castle

- 2D shapes
- 3D shapes
- Castle
- Design criteria
- Evaluate
- Facade
- Feature
- Flag
- Net
- Recyclable
- Scoring
- Stable
- Strong
- Structure
- Tab
- Weak

Textiles: Cushions / Egyptian collars

- Accurate
- Applique
- Cross-stitch
- Cushion
- Decorate
- Detail
- Fabric
- Patch
- Running-stitch
- Seam
- Stencil
- Stuffing
- Target audience
- Target customer
- Template

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 3

Electrical systems: Electric poster

- Battery
- Bulb
- Circuit
- Circuit component
- Crocodile wires
- Electrical product
- Electrical system
- Final design
- Information design
- Initial ideas
- Peer assessment
- Research
- Self assessment
- Sketch

Mechanical systems: Pneumatic toys

- Exploded-diagram
- Function
- Input
- Lever
- Linkage
- Mechanism
- Motion
- Net
- Output
- Pivot
- Pneumatic system
- Thumbnail sketch

Digital world: Wearable technology

- Analogue
- Analyse
- Annotate
- Badge
- CAD
- Control
- Design criteria
- Develop
- Digital
- Digital revolution
- Digital world
- Display
- Electronic
- Fastening
- Feature
- Feedback
- Form
- Function
- Initiate
- Layers
- Loops
- Micro: bit
- Monitor
- Net
- Point of sale
- Product
- Product concept
- Program
- Sense
- Simulator
- Smart
- Technology
- Test
- User

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 4

Structures: Pavilions

- Aesthetic
- Cladding
- Design criteria
- Evaluation
- Frame structure
- Function
- Inspiration
- Pavilion
- Reinforce
- Stable
- Structure
- Target audience
- Target customer
- Texture
- Theme

Food: Adapting a recipe

- Adapt
- Budget
- Cooling rack
- Creaming
- Equipment
- Evaluation
- Flavour
- Ingredients
- Method
- Net
- Packaging
- Prototype
- Quantity
- Recipe
- Rubbing
- Sieving
- Target audience
- Unit of measurement
- Utilities

Textiles: Fastenings

- Aesthetic
- Assemble
- Book sleeve
- Design criteria
- Evaluation
- Fabric
- Fastening
- Mock-up
- Net
- Running-stitch
- Stencil
- Target audience
- Target customer
- Template

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 4

Electrical systems: Torches

- Battery
- Bulb
- Buzzer
- Cell
- Component
- Conductor
- Copper
- Design criteria
- Electrical item
- Electricity
- Electronic item
- Function
- Insulator
- Series circuit
- Switch
- Test
- Torch
- Wire

Mechanical systems: Making a slingshot car

- Aesthetic
- Air resistance
- Chassis
- Design
- Design criteria
- Function
- Graphics
- Kinetic energy
- Mechanism
- Net
- Structure

Digital world: Mindful moments timer

- Advantage
- Annotate
- Assemble
- Aesthetic
- Block
- Brand identity
- Brand
- Bug
- CAD
- Clipart
- Coding
- Criteria
- Debug
- Design
- Develop
- Disadvantage
- Display
- Ergonomic
- Evaluate
- Exhibition
- Feedback
- Form
- Function
- Join
- Logo
- Loop
- Mindfulness
- Model
- Net
- Product
- Program
- Prototype
- Research
- Script
- Sketchpad
- Test
- Timer
- User
- Variable

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 5

Food: What could be healthier?

- Beef
- Cross-contamination
- Diet
- Ethical issues
- Farm
- Healthy
- Ingredients
- Method
- Nutrients
- Packaging
- Reared
- Recipe
- Research
- Substitute
- Supermarket
- Vegan
- Vegetarian
- Welfare

Mechanical systems: Making a pop-up book

- Aesthetic
- Computer-aided design (CAD)
- Caption
- Design
- Design brief
- Design criteria
- Exploded-diagram
- Function
- Input
- Linkage
- Mechanism
- Motion
- Output
- Pivot
- Prototype
- Slider
- Structure
- Template

Textiles: Stuffed toys

- Accurate
- Annotate
- Appendage
- Blanket-stitch
- Design criteria
- Detail
- Evaluation
- Fabric
- Sew
- Shape
- Stuffed toy
- Stuffing
- Template

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 5

Electrical systems: Doodlers

- Circuit component
- Configuration
- Current
- Develop
- DIY
- Investigate
- Motor
- Motorised
- Problem solve
- Product analysis
- Series circuit
- Stable
- Target user

Structures: Bridges

- Abutment
- Accurate
- Arched bridge
- Beam bridge
- Coping saw
- Evaluation
- File
- Mark out
- Material properties
- Measure
- Predict
- Reinforce
- Research
- Sandpaper
- Set square
- Suspension bridge
- Tenon saw
- Test
- Truss bridge
- Wood

Digital world: Monitoring devices

- Alert
- Ambient
- Boolean
- Consumables
- Decompose
- Development
- Device
- Duplicate
- Durable
- Electronic
- Inventor
- Lightweight
- Man-made
- Manipulate
- Manoeuvre
- Microplastics
- Model
- Monitor
- Monitoring device
- Moulded
- Plastic
- Plastic pollution
- Programming comment
- Programming loop
- Reformed
- Replica
- Research
- Sensor
- Strong
- Sustainability
- Synthetic
- Thermometer
- Thermoscope
- Value
- Variable
- Versatile
- Water-resistant
- Workplane

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 6

Food: Come dine with me

- Accompaniment
- Collaboration
- Cookbook
- Cross-contamination
- Equipment
- Farm
- Flavour
- Illustration
- Imperative-verb
- Ingredients
- Method
- Nationality
- Preparation
- Processed
- Reared
- Recipe
- Research
- Storyboard
- Target audience
- Top tips
- Unit of measurement

Mechanical systems: Automata toys

- Accurate
- Assembly-diagram
- Automata
- Axle
- Bench hook
- Cam
- Clamp
- Component
- Cutting list
- Diagram
- Dowel
- Drill bits
- Exploded-diagram
- Finish
- Follower
- Frame
- Function
- Hand drill
- Jelutong
- Linkage
- Mark out
- Measure
- Mechanism
- Model
- Research
- Right-angle
- Set square
- Tenon saw

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 6

Textiles: Waistcoats

- Accurate
- Adapt
- Annotate
- Design
- Design criteria
- Detail
- Fabric
- Fastening
- Knot
- Properties
- Running-stitch
- Seam
- Sew
- Shape
- Target audience
- Target customer
- Template
- Thread
- Unique
- Waistcoat
- Waterproof

Electrical systems: Steady hand game

- Assemble
- Battery
- Battery pack
- Benefit
- Bulb
- Bulb holder
- Buzzer
- Circuit
- Circuit symbol
- Component
- Conductor
- Copper
- Design
- Design criteria
- Evaluation
- Fine motor skills
- Fit for purpose
- Form
- Function
- Gross motor skills
- Insulator
- LED
- User

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Vocabulary Progression in Design Technology

Design and technology vocabulary

KS2 | Year 6

Structures: Playgrounds

- Adapt
- Apparatus
- Bench hook
- Cladding
- Coping saw
- Design
- Dowel
- Evaluation
- Feedback
- Idea
- Jelutong
- Landscape
- Mark out
- Measure
- Modify
- Natural materials
- Plan view
- Playground
- Prototype
- Reinforce
- Sketch
- Strong
- Structure
- Tenon saw
- Texture
- User
- Vice
- Weak

Digital world: Navigating the world

- 3D CAD
- Application (apps)
- Biodegradable
- Boolean
- Cardinal compass
- Client
- Compass
- Concept
- Convince
- Corrode
- Duplicate
- Environmentally friendly
- Equipment
- Feature
- Finite
- Function
- Functional
- GPS tracker
- If statement
- Infinite
- Investment
- Lightweight
- Loop
- Manufacture
- Materials (wood, metal, plastic etc.)
- Mouldable
- Navigation
- Non-recyclable
- Product lifecycle
- Product lifespan
- Program
- Recyclable
- Smart
- Sustainable
- Sustainable design
- Unsustainable design
- Variable
- Workplane

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Including Pupils with SEND in Design Technology

Adjustments for SEND pupils will be made on an individual basis by staff who know them best. These adjustments may include referring to EHCPs where applicable. Staff may also take into account the following considerations for SEND pupils and make adjustments as needed to ensure all pupils are included with Design Technology lessons.

Sound and light issues

- Avoid demonstrations or discussion when machines are running.
- The noise in design and technology lessons can be very uncomfortable for pupils with a hearing impairment. While a pupil is working on a practical activity allow them to switch off their aids if it is very noisy (remind them to switch them on again afterwards).
- Interactive whiteboards are non-reflective to reduce glare.

Seating

- Consider the accessibility of demonstrations.
- Plan the demonstration area so that it is clearly laid out, uncluttered and gives all pupils a clear view.
- Height-adjustable tables, sinks and hobs make activities more accessible.
- Seating should allow all pupils in the class to communicate, respond and interact with each other and the teacher in discussions.
- Avoid the need for copying lots of information. For example, notes on interactive whiteboards can be printed off for all pupils.

Resources

- Use systems such as racks so that items such as tools can be found and put away easily.
- To make tasks accessible, pupils use, where appropriate:
  - " specialist aids – eg talking weighing scales, jigs to aid cutting, templates, patterns, ready-made parts, kettle- tipping devices, sprung or electric scissors, and
  - " generic aids – eg jumbo pencils if hand control is weak, non-slip mats (dycem) to hold papers, books and equipment in place, BluTac to hold small items or as a temporary fixing (eg for rulers when drawing).

Health and safety

- Consider the safety of demonstrations.
- Make sure pupils do not come into contact with materials they are allergic to.

Multi-sensory approaches

- Prepare visual prompts, using images, photos or symbols, showing the order to carry out a sequence of activities for a particular process. Checklists allow pupils to see what they have completed, what to do next and where to finish.
- Some pupils will need to use non- visual means to evaluate different products, to use this information to generate ideas and to become familiar with tools and other equipment. This will require extra time.

ICT

- In design and technology lessons, ICT can:
  - help pupils model ideas and design products – eg using graphics, computer-aided design (CAD) software or spreadsheets
  - support making activities using computer-aided manufacturing (CAM) equipment such as embroidery machines, plotter/ cutters etc, and
  - be used to develop symbol-supported recipes or instructions.

Planning support

- Support could include:
  - carrying out activities by following the pupil's instructions
  - specific support so that pupils can engage in certain practical activities, eg translating design ideas into a drawing.

- Pupils working at national curriculum level 1 will use tools and equipment 'with help where needed', and without this support will not be able to achieve. For these pupils, supervision and help from an adult and/or buddy in the making stages is invaluable for them to learn and practise skills safely.
- Additional adults should promote pupils' independence by giving guidance and asking questions that enable pupils to:
  - think for themselves – pupils should not always be following a designing and making process step by step, with the teacher/ additional adult doing most of the thinking, and
  - perform tasks for themselves – there is a fine line between intervention and taking over a pupil's project.

- Additional adults should be clear about:
  - the order and importance of processes in a task
  - the skills and knowledge they must promote, and
  - the health and safety rules, eg basic food hygiene.

Managing group work and discussion

- Design and make assignments give pupils opportunities to work as individuals or in a team, learning from the work of others. For some pupils, eg those on the autistic spectrum, developing ideas with others can be challenging. Pairings and groupings need to be sensitive to this.

Teachers' communication

- Clarify technical terms that have different meanings in other contexts, for example 'knead'/'need', 'grain', 'glaze', 'form', 'saw', 'seam', etc.
- Labels placed around the room, lists of key words, posters, etc can help pupils to recognise and spell the names of important pieces of equipment. Flow diagrams of key processes, time plans or design prompts with graphics may also be helpful.
- Ask pupils open-ended questions at first, for example to elicit original ideas and get a feel for their level of experience – eg "Has anybody got any ideas of other foods we could add to this bread to make it different?" If ideas are not forthcoming or are limited, have real examples ready.

Pupils' communication

- Pupils could contribute to product evaluation, where appropriate, using simple choice cards with words and/or symbols, eg for like/dislike, simple ranking or recording sheets.

Pupil-teacher interaction

- Many pupils find talking about what they have done easier than talking about what they plan to do.

Understanding the aims of the lesson

- For example, for the objective:
  To know that we need to eat five portions of fruit and vegetables a day, show pupils real or pictorial examples of '5 a day'.

Pupils know where they are in relation to learning aims

- Break down the designing and making stages into small manageable steps, and incorporate designing into 'mini making' tasks with specific targets. Use a tick list or wallchart so that pupils are clear about what they are working towards and how far they have got in relation to completing the project.

Understanding assessment criteria

- Encourage pupils to become aware of their own and others' work through:
  - investigating, taking apart and evaluating products, and
  - evaluating other designers' work against clear criteria.
  - Encourage pupils to use these skills to evaluate and improve their own work.
- Pupils may find it easier to:
  - look at a limited range of products at one time
  - have a mixture of familiar and less familiar products to look at
  - use prepared forms to record their responses, and
  - discuss, examine and taste products as a group rather than relying on written descriptions.
- Make sure that pupils, particularly those with BESD (behavioural, emotional and social difficulties), judge their own work against the design specification rather than against the work of other pupils.

Reviewing progress and helping pupils to improve

- When pupils destroy work or struggle when they make mistakes, highlight the developing ideas and mistakes of professional designers and others. Show how mistakes can be corrected, to remove pupils' fear of making mistakes.

Understanding the structure of the lesson

- Warn pupils when they will need to be flexible, and anticipate and plan to cope with the distress this may cause some pupils. For instance, a food product may take between 10 and 15 minutes to cook, and some pupils may become distressed if it is not ready exactly on time.

Relevant and motivating tasks

- Avoid abstract contexts. Provide a range of concrete starting points, materials and techniques.
- Provide opportunities for pupils to design for real purposes and to make real decisions.
- Choose projects where pupils can produce high-quality products, so they can be proud of what they have designed and made. This will raise their confidence and self- esteem and encourage them to be more ambitious in designing and making in future projects.
- Consider the length and complexity of tasks. Some pupils may be daunted by long or seemingly difficult tasks, and lack the confidence to get started. Pupils often find it easier to work on shorter, more focused assignments, which provide small elements of success to reward and motivate them. Break projects into smaller steps – eg instead of broad stages such as 'research', list sub-stages such as:

  - write five questions for your survey
  - ask your target audience to answer your survey
  - record your results, and
  - present your results.
  - Short, focused practical tasks (FPTs) are closely structured and led by the teacher. They allow pupils to practise and succeed in one or more design and technology processes. They build pupils' confidence and can give them ideas for their design – eg doing a series of biscuit-making activities before pupils consider how to design and make a new biscuit. These 'mini making' activities are highly motivating for pupils as they can see the results of their progress and efforts immediately.
  - Design and make assignments give pupils the chance to put their knowledge and skills to the test in meeting challenges that address real needs and wants, and to apply design ideas and concepts in real and practical ways.
  - If pupils only produce few or stereotypic ideas because they do not want to risk failure, provide plenty of stimuli, ideas and alternatives, including design solutions. These stimuli might include:
  - visits as a stimulus for design contexts
  - experts working alongside pupils (make sure they are well briefed), and
  - tasks related to pupils' hobbies, interests and strengths.

Reducing reliance on memory

- Using digital cameras to record each stage of designing and making, then sequencing the photos, can be a useful tool to aid pupils' memory of the stages of completing the work.
- Display step-by-step reminders of key processes.
- Regularly repeat and reinforce previously learnt skills and processes.