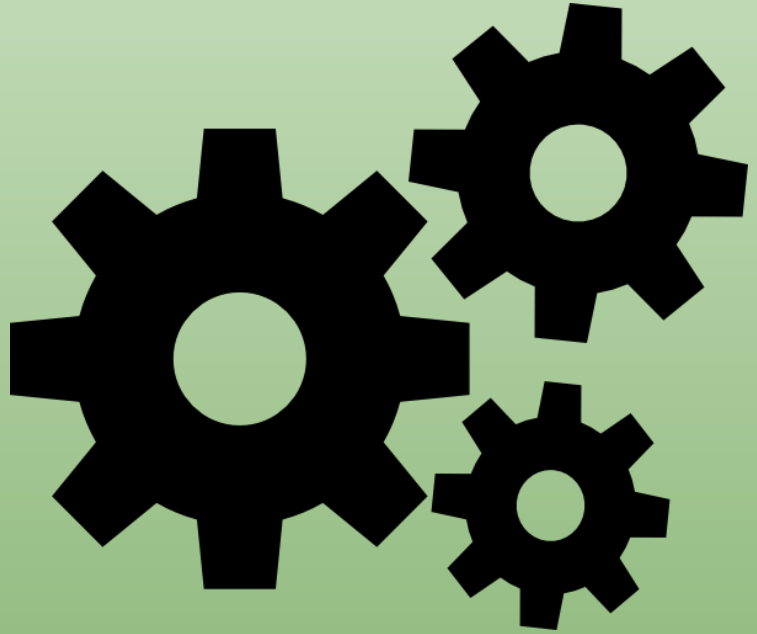
DESIGN & TECHNOLOGY

Learning Journey



	Autumn		Spring		Summer	
	DT	**ART**	**DT**	**ART**	**DT**	**ART**
EYFS	**Construction, Food & Textiles**	**Drawing , Materials & Painting**	**Construction, Food & Textiles**	**Drawing , Materials & Painting**	**Construction, Food & Textiles**	**Drawing , Materials & Painting**
YEAR 1	**Textiles:** Puppets	**Drawing:** Make your mark	**Structures:** Windmills	**Sculpture & 3D:** Paper play	**Food:** Smoothies	**Painting & Mixed Media:** Colour splash
YEAR 2	**Structures:** Baby bear's chair	**Craft & Design:** Map it out	**Mechanisms:** Making a moving monster	**Painting & Mixed Media:** Life in colour	**Food:** A balanced diet	**Sculpture & 3D:** Clay houses
YEAR 3	**Food:** Eating seasonally	**Drawing:** Growing artists	**Structures:** Constructing a castle	**Painting & Mixed Media:** Prehistoric painting	**Textiles:** Cushions	**Sculpture & 3D:** Abstract shape & space
YEAR 4	**Electrical Systems:** Torches	**Craft & Design:** Ancient Egyptian scrolls (Y3)	**Mechanical Systems:** Slingshot Car	**Painting & Mixed Media:** Light & Dark	**Food:** Adapting a recipe	**Craft & Design:** Fabric of nature
YEAR 5	**Food:** What could be healthier?	**Sculpture & 3D:** Interactive Installation	**Structure:** Bridges	**Drawing:** I need space	**Mechanical Systems:** Pop-up book	**Painting & Mixed Media:** Portraits
YEAR 6	**Electrical Systems:** Steady Hand Game	**Craft & Design:** Photo opportunity	**Mechanical Systems:** Automata Toys	**Drawing:** Make my voice heard	**Structures:** Making Playgrounds	**Sculpture & 3D:** Making memories

DESIGN & TECHNOLOGY Learning Journey at Acre Heads	
Design & Technology Understanding, Knowledge and Skills objectives:	
Intent	At Acre Heads, our vision is a design and technology curriculum which combines skills, knowledge, concepts and values to enable children to tackle real problems. We encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. It can improve analysis, problem solving, practical capability and evaluation skills. We aim to, wherever possible, link work to other disciplines such as mathematics, science, engineering, computing and art. The children are encouraged to become innovators and risk-takers.
Substantive knowledge in Design & Technology	By the end of Key Stage Two, children at Acre Heads will be able to: prepare ingredients safely and hygienically and cook nutritious food. They will be able to design their own products using a range of materials and evaluate their product against success criteria. The children will generate their own product ideas by reflecting upon existing products and then developing prototypes. Finally, in order to make successful products, the children will have a secure understanding of mechanical structures, such as: gears, pulley systems and levers.
Disciplinary knowledge in Design & Technology	Children from Acre Heads will be able to participate fully in an increasingly technological world and have an understanding of how to be critical and reflective consumers. They will be able to use their practical, creative and reflective skills to become consumers and innovators who are well informed and can use their own skills to develop products for the future.
Design & Technology	Problem solving through developing ideas, disassembly and design - creating things that are better and evaluating to demonstrate that they can be even better if.

Design and Technology: EYFS

Creating with Materials ELG:

- *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.*
- *Make use of props and materials when role playing characters in narratives and stories.*

Bring Imaginative ELG:

- *Invent, adapt and recount narratives and stories with peers and their teacher.*

		Construction	Key Vocabulary	Resources	Links to Development Matters	Links to KS1
Nursery	Stage 1	Builds towers by stacking objects Explores clay/playdough	Build, stack, squeeze, press, roll	**Emergent:** Building blocks Small world Larger construction kits e.g. duplo Playdough/clay	**EAD (0-3)** Explore different materials, using all their senses to investigate them. Manipulate and play with different materials. Use their imagination as they consider what they can do with different materials. Make simple models which express their ideas. Stimulate young children's interest in modelling. Suggestions: provide a wide range of found materials ('junk') as well as blocks, clay, soft wood, card, offcuts of fabrics and materials with different textures. Provide appropriate tools and joining methods for the materials offered. Encourage young children to explore materials/ resources finding out what they are/what they can do, and decide how the they want to use them	To choose appropriate resources and tools To join materials and components To draw and label a simple plan of their intended product before making it To know how to make a sturdy product To explain what works well in the model they have made and what they would do differently next time
	Stage 2	create enclosed spaces Stack blocks vertically, build and balance e.g. a tower Makes marks in clay/playdough.	Build, stack, tower, balance, join			
	Stage 3	Builds simple models using walls, roofs and towers. Manipulates clay/playdough (rolls, cuts, squashes, pinches, twists Explore and use construction kits.	Build, stack, tower, balance, join, roll, squash, pinch, cut, create.	**Mid Level:** Range of emergent/high level resources – depending on children's fine motor skills. Rolling pins Shaped cutters	**EAD (3-4)** Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures. Offer opportunities to explore scale. Suggestions: - long strips of wallpaper - child size boxes - different surfaces to work on e.g. paving, floor, tabletop or easel Listen and understand what children want to create before offering suggestions. Invite artists, musicians and craftspeople into the setting, to widen the range of ideas which children can draw on.	
FS2	Stage 4	Builds models. Can use a variety of resources – loose part play Makes something that they give meaning to Learn how to how to manipulate materials using construction kits. Begin to use real tools to construct.	Build, stack, tower, balance, join, roll, squash, pinch, cut, stick, thread, create, design, construct, explain,			
	Stage 5	Builds models which replicate those in real life. Can use a variety of resources – loose part play Makes something with clear intentions. Know how to manipulate materials using construction kits Learning how to use tools and materials with care and precision	Build, join, roll, squash, pinch, cut, stick, thread, create, design, construct, explain, evaluate	**High Level:** Junk modelling resources Scissors PVA glue, sellotape, split pins, treasury tags. Hammers, nails Smaller construction kits e.g. k'nex, lego	**EAD (Reception)** Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively sharing ideas, resources and skills. Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. Provide a range of materials and tools and teach children to use them with care and precision. Promote independence, taking care not to introduce too many new things at once	

Design and Technology: EYFS

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Bring Imaginative ELG:

- *Invent, adapt and recount narratives and stories with peers and their teacher.*

		Textiles	Key Vocabulary	Resources	Links to Development Matters	Links to KS1
Nursery	Stage 1	Use glue sticks with support	***Glue, stick***	**Emergent:** Glue sticks PVA glue Spatulas Paper Card Large beads string	**EAD (0-3)** Explore different materials, using all their senses to investigate them. Manipulate and play with different materials. Use their imagination as they consider what they can do with different materials. Make simple models which express their ideas. *Stimulate young children's interest in modelling. Suggestions: provide a wide range of found materials ('junk') as well as blocks, clay, soft wood, card, offcuts of fabrics and materials with different textures.* *Provide appropriate tools and joining methods for the materials offered.* *Encourage young children to explore materials/ resources finding out what they are/what they can do, and decide how the they want to use them*	To choose appropriate resources and tools To know how to join two pieces of material together using a running stitch. To draw and label a simple plan of their intended product before making it. To choose appropriate resources and tools. To explain what works well in the model they have made and what they would do differently next time.
	Stage 2	Use glue spatulas with support Thread large items onto a string.	***Glue, stick, spatula***			
	Stage 3	Use glue sticks and glue spatulas independently Adds other materials to develop outcome (tissue paper, glitter…) Thread beads onto a pipe cleaner	***Glue, stick, spatula, join, materials, thread, bead***	**Mid Level:** Range of emergent/high level resources – depending on children's fine motor skills. A variety of paper e.g. tissue paper, crape paper Scissors Glitter/Buttons/beads String Pipe cleaners	**EAD (3-4)** Join different materials and explore different textures. *Offer opportunities to explore scale. Suggestions: - long strips of wallpaper - child size boxes - different surfaces to work on e.g. paving, floor, tabletop or easel* *Suggestions: glue and masking tape for sticking pieces of scrap materials onto old cardboard boxes, hammers and nails, glue guns, paperclips and fasteners.*	
FS2	Stage 4	Join items with glue or tape Thread beads onto a string.	***Glue, stick, spatula, join, materials, make, create, thread, bead***			
	Stage 5	Join items in a variety of ways – Sellotape, masking tape, string, ribbon. Weave thread/ribbon using up and under motion.	***Glue, stick, spatula, join, materials, thread, cut, create, weave***	**High Level:** Glue sticks, PVA glue Sellotape Masking tape Ribbon String Range of sized paper (large, middle sized, small, post its, shaped) Junk modelling resources Scissors Glitter/Buttons/beads Ribbons	**EAD (Reception)** Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively sharing ideas, resources and skills. *Provide opportunities to work together to develop and realise creative ideas. Provide children with a range of materials for children to construct with.* *Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims.* *Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. Provide a range of materials and tools and teach children to use them with care and precision.* *Promote independence, taking care not to introduce too many new things at once.*	

Design and Technology: EYFS

Creating with Materials ELG:

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Bring Imaginative ELG:

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		Food	Key Vocabulary	Resources	Links to Development Matters	Links to KS1
Nursery	Stage 1	Explore a variety of foods and textures by touch, smell, taste.	Food, smell, taste, feel	**Emergent:** A range of foods to explore.	**EAD (0-3)** Explore different materials, using all their senses to investigate them. *Encourage young children to explore materials/ resources finding out what they are/what they can do, and decide how the they want to use them.*	To know the original sources of some common foods. To explain what works well and not so well in existing products. To explain why they have chosen to use specific ingredients. To describe the ingredients used when making a food product. To explain what works well in the model they have made and what they would do differently next time.
	Stage 2	Explore a variety of foods and begin to describe textures by touch, smell, taste.	Food, smell, taste, feel, sweet, sour, like dislike			
	Stage 3	Use pretend food and drinks in role play. Know the names of the food and drink they're playing with.	Food, pretend, meal, fruit, vegetables	**Mid Level:** Range of emergent/high level resources. Pretend role play food.	**EAD (3-4)** Take part in simple pretend play, using an object to represent something else even though they are not similar. *Children generally start to develop pretend play with 'rules' when they 3 or 4 years old.* *Suggestion: offer pinecones in the home corner for children to pour into pans and stir like pasta.*	
FS2	Stage 4	Talk about healthy eating using picture books and pretend food in role play Talk about the foods and drinks they know. Follow visual and verbal instructions. Use language such as hot and cold.	Healthy, unhealthy, fruit, vegetable, sorting, instructions, hot, cold	**High Level:** Ingredients required. Resources required e.g. Knives, forks, spoons Bowls Scales	**EAD (Reception)** Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively sharing ideas, resources and skills. *Provide opportunities to work together to develop and realise creative ideas. Provide children with a range of materials for children to construct with.* *Encourage them to think about and discuss what they want to make. Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims.* *Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. Provide a range of materials and tools and teach children to use them with care and precision.*	
	Stage 5	Know and talk about how to support health and wellbeing through healthy eating and good hygiene Follow visual and verbal instructions. Design, prepare and make a food product from fresh ingredients. Practise stirring, mixing, pouring, blending ingredients.	Healthy, unhealthy, fruit, vegetable, instructions, sorting, stirring, mixing, pouring, blending, food names, prepare, make			

Design & Technology: Year 1

Term:	AUTUMN	SPRING	SUMMER
Unit:	**Textiles:** Puppets	**Structures:** Windmills	**Food:** Smoothies
Link to Kapow Planning:	Unit Lesson Plans	Unit Lesson Plans	Unit Lesson Plans
Unit Outcomes:	Pupils who are secure will be able to: ● Join fabrics together using pins, staples or glue. ● Design a puppet and use a template. ● Join their two puppets' faces together as one. ● Decorate a puppet to match their design.	Pupils who are secure will be able to: ● Follow design criteria to meet the needs of a user. ● Make a stable structure. ● Make functioning sails/blades that attach to the supporting structure. ● Improve their windmill.	Pupils who are secure will be able to: ● Describe fruits and vegetables and explain how to identify fruits. ● Name a range of places that fruits and vegetables grow. ● Describe basic characteristics of fruit and vegetables. ● Prepare fruits and vegetables to make a smoothie.
Lesson Objectives:	**L1:** I can join fabrics together using different methods. **L2:** I can use a template to create my design. **L3:** I can join two fabrics together accurately. **L4:** I can embellish my design using joining methods and reflect on a finished product, explaining likes and dislikes.	**L1:** I can create a stable structure. **L2:** I can use tools and equipment accurately to make part of a structure. **L3:** I can join parts of a structure. **L4:** I can evaluate a structure.	**L1:** I can identify fruits. **L2:** I can describe where fruits and vegetables grow. **L3:** I can practise food preparation. **L4:** I can select ingredients for a recipe. **L5:** I can apply food preparation skills to a recipe. **L6:** I can evaluate against the design brief.
Key Vocabulary for each Seesaw lesson:	**L1:** design - equipment - glue - hand puppet - safety pin - technique **L2:** decorate - design - fabric - inspiration - model - stencil - template **L3:** equipment - fabric - glue - safety pin - technique **L4:** decorate - design criteria - equipment - inspiration - model - technique	**L1:** base - rotate - rotor - rotor blade - sail - stable - structure **L2:** equal - fold - length - rotor blades - sails - same - scissors - width **L3:** attach - join - rotate - structure - test - turn **L4:** evaluate - improve - test	**L1:** fruit - plant - seed **L2:** bush - leaf - root - soil - stem - tree - vegetable - vine **L3:** chopping board - cut - fork - juice - juicer - table knife **L4:** flavour - select - taste **L5:** blend - blender - cut - ingredients - juice - recipe **L6:** compare - evaluate

Design & Technology: Key Stage 1

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
design purposeful, functional, appealing products for themselves and other users based on design criteria *generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology*			*select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products* *evaluate their ideas and products against design criteria*	*build structures, exploring how they can be made stronger, stiffer and more stable* *explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.*		
Year 1	**Structures**	• Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design.	• 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.	• 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.	• 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 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.	**Client ● Design ● Evaluation ● Net ● Stable ● Strong ● Test ● Weak ● Windmill**
	Mechanisms	• 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.	• 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.	• 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.	• 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 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.	**Assemble ● Design ● Evaluation ● Mechanism ● Model ● Sliders ● Stencil ● Target audience ● Template ● Axle ● Axle holder ● Chassis ● Fix ● Mechanic ● Model ● Test ● Wheel**

Design & Technology: Key Stage 1

Skills				Knowledge		
Design		**Make**	**Evaluate**	**Cooking & Nutrition**	**Textiles**	**Key Vocabulary**
design purposeful, functional, appealing products for themselves and other users based on design criteria *generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology*		*select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products* *evaluate their ideas and products against design criteria*	*use the basic principles of a healthy and varied diet to prepare dishes* *understand where food comes from.*		
Year 1	**Cooking & Nutrition**	• Designing smoothie carton packaging by-hand or on ICT software.	• 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.	• Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging.	• 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 '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.	**Blender ● Carton ● Fruit ● Healthy ● Ingredients ● Peel ● Peeler ● Recipe ● Slice ● Smoothie ● Stencil ● Template ● Vegetable**
	Textiles	• Using a template to create a design for a puppet.	• Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing the steps taken during construction.	• Reflecting on a finished product, explaining likes and dislikes.			**Decorate ● Design ● Fabric ● Glue ● Model ● Hand puppet ● Safety pin ● Staple ● Stencil ● Template**

Design & Technology: Year 2

Term:	AUTUMN	SPRING	SUMMER
Unit:	**Structures:** Baby bear's chair	**Mechanisms:** Making a moving monster	**Food:** A balanced diet
Link to Kapow Planning:	Unit Lesson Plans	Unit Lesson Plans	Unit Lesson Plans
Unit Outcomes:	Pupils who are secure will be able to: ● Identify man-made and natural structures. ● Identify stable and unstable structural shapes. ● Contribute to discussions. ● Identify features that make a chair stable. ● Work independently to make a stable structure, following a demonstration. ● Explain how their ideas would be suitable for Baby Bear. ● Produce a model that supports a teddy, using the appropriate materials and construction techniques. ● Explain how they made their model strong, stiff and stable.	Pupils who are secure will be able to: ● Identify the correct terms for levers, linkages and pivots. ● Analyse popular toys with the correct terminology. ● Create functional linkages that produce the desired input and output motions. ● Design monsters suitable for children, which satisfy most of the design criteria. ● Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design. ● Select and assemble materials to create their planned monster features. ● Assemble the monster to their linkages without affecting their functionality.	Pupils who are secure will be able to: ● Name the main food groups and identify foods that belong to each group. ● Describe the taste, feel and smell of a given food. ● Think of three different wrap ideas, considering flavour combinations. ● Construct a wrap that meets the design brief and their plan.
Lesson Objectives:	**L1:** I can explore the concept and features of structures and the stability of different shapes. **L2:** I can understand that the shape of the structure affects its strength. **L3:** I can make a structure according to design criteria. **L4:** I can produce a finished structure and evaluate its strength, stiffness and stability.	**L1:** I can look at objects and understand how they move. **L2:** I can look at objects and understand how they move. **L3:** I can explore different design options. **L4:** I can make a moving monster.	**L1:** I can recognise foods and their food groups. **L2:** I can identify the balance of food groups in a meal. **L3:** I can identify an appropriate piece of equipment to prepare a given food. **L4:** I can select balanced combinations of ingredients. **L5:** I can design based on criteria. **L6:** I can evaluate a dish based on design criteria.
Key Vocabulary for each Seesaw lesson:	**L1:** design criteria - man-made - natural - properties - shape - stable - structure **L2:** stable - stiff - strong - test - weak **L3:** design criteria - model - stable - stiff - strong - structure **L4:** design criteria - model - stable - stiff - structure - test	**L1:** axle - design criteria - input - linkage - mechanical - output - pivot - wheel **L2:** input - linkage - mechanical - output - pivot **L3:** design criteria - input - linkage - mechanical - output - pivot - survey **L4:** design criteria - evaluation - linkage - mechanical - pivot	**L1:** carbohydrates - dairy - fruit - oils - proteins - spreads - vegetables **L2:** balanced - diet - menu **L3:** chopping board - cut - grate - grater - scissors - snip - spread - table knife **L4:** combination - design brief - feel - smell - taste **L5:** design - ingredients **L6:** appearance - evaluate - review

Design & Technology: Key Stage 1

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
design purposeful, functional, appealing products for themselves and other users based on design criteria *generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology*			*select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products* *evaluate their ideas and products against design criteria*	*build structures, exploring how they can be made stronger, stiffer and more stable* *explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.*		
Year 2	**Structures**	• Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects.	• 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.	• 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.	• 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.	• To know that natural structures are those found in nature. • To know that man-made structures are those made by people.	**Function ● Man-made ● Mould ● Natural ● Stable ● Stiff ● Strong ● Structure ● Test ● Weak**
	Mechanisms	• 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.	• 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.	• Evaluating different designs. • Testing and adapting a design. • Evaluating own designs against design criteria. • Using peer feedback to modify a final design.	• 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.	• 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.	**Evaluation ● Input ● Lever ● Linear motion ● Linkage ● Mechanical ● Mechanism ● Motion ● Oscillating motion ● Output ● Pivot ● Reciprocating motion ● Rotary motion ● Survey ● Axle ● Decorate ● Ferris wheel ● Stable ● Strong ● Test ● Waterproof ● Weak**

Design & Technology: Key Stage 1

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Cooking & Nutrition**	**Textiles**	**Key Vocabulary**
design purposeful, functional, appealing products for themselves and other users based on design criteria *generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology*			*select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products* *evaluate their ideas and products against design criteria*	*use the basic principles of a healthy and varied diet to prepare dishes* *understand where food comes from.*		
Year 2	**Cooking & Nutrition**	• Designing a healthy wrap based on a food combination which works well together.	• Slicing food safely using the bridge or claw grip. • Constructing a wrap that meets a design brief.	• 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.	• 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'.	• 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.	**Alternative ● Diet ● Balanced diet ● Evaluation ● Expensive ● Healthy ● Ingredients ● Nutrients ● Packaging ● Refrigerator ● Sugar ● Substitute**
	Textiles	• Designing a pouch.	• 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.	• 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.			**Accurate ● Fabric ● Knot ● Pouch ● Running-stitch ● Sew ● Shape ● Stencil ● Template ● Thimble**

Design & Technology: Year 3

Term:	AUTUMN	SPRING	SUMMER
Unit:	**Food:** Eating seasonally	**Structures:** Constructing a castle	**Textiles:** Cushions
Link to Kapow Planning:	Unit Lesson Plans	Unit Lesson Plans	Unit Lesson Plans
Unit Outcomes:	Pupils who are secure will be able to: • Explain that fruits and vegetables grow in different countries based on their climates. • Understand that seasonal fruits and vegetables grow in a given season. • Understand that eating seasonal fruit and vegetables positively affects the environment. • Design a tart recipe using seasonal ingredients.	Pupils who are secure will be able to: • Draw and label a simple castle that includes the most common features. • Recognise that a castle is made up of multiple 3D shapes. • Design a castle with key features which satisfy a given purpose. • Score or cut along lines on the net of a 2D shape. • Use glue to securely assemble geometric shapes. • Utilise skills to build a complex structure from simple geometric shapes. • Evaluate their work by answering simple questions.	Pupils who are secure will be able to: • Use a cross-stitch to join two pieces of fabric together. • Design and cut the template for a cushion. • Use cross-stitch and appliqué to decorate a cushion face. • Make a cushion that includes appliqué and cross-stitch.
Lesson Objectives:	**L1:** I can explain why food comes from different places around the world. **L2:** I can explain the benefits of seasonal foods. **L3:** I can develop cutting and peeling skills. **L4:** I can evaluate seasonal ingredients. **L5:** I can design a mock-up using criteria. **L6:** I can evaluate a dish.	**L1:** I can recognise how multiple shapes (2D and 3D) are combined to form a strong and stable structure. **L2:** I can design a castle. **L3:** I can construct 3D nets. **L4:** I can construct and evaluate my final product.	**L1:** I can learn how to sew cross-stitch and appliqué. **L2:** I can design a product and its template. **L3:** I can decorate fabric using appliqué and cross-stitch. **L4:** I can assemble and complete a cushion.
Key Vocabulary for each Seesaw lesson:	**L1:** arid - climate - country - Mediterranean - mountain - polar - temperate - tropical - weather **L2:** climate - export - import - seasonal - seasons **L3:** cut - grate - peel - snip **L4:** fruit - ingredients - seasonal - taste - texture - vegetable **L5:** complementary - design - mock-up **L6:** appearance - evaluate - taste - texture	**L1:** 2D - 3D - castle - key features - stable - stiff - strong **L2:** 2D - 3D - castle - shape **L3:** castle - net - shape - structure **L4:** castle - design - net - Scoring - structure - tab	**L1:** appliqué - cross-stitch - fabric - patch - thread **L2:** cushion - design - seam - template **L3:** accurate - embellish - running stitch **L4:** accurate - appliqué - cross-stitch - running stitch - seam - stuffing

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 3	**Structures**	• 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.	• Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials.	• 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.	• To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures.	• 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.	**2D shapes ● 3D shapes ● Castle ● Design criteria ● Evaluate ● Facade ● Feature ● Flag ● Net ● Recyclable ● Scoring ● Stable ● Strong ● Structure ● Tab ● Weak**
	Mechanisms	• 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.	• 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.	• 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.	• 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 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.	**Exploded-diagram ● Function ● Input ● Lever ● Linkage ● Mechanism ● Motion ● Net ● Output ● Pivot ● Pneumatic system ● Thumbnail sketch**

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Cooking & Nutrition**	**Textiles**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*understand and apply the principles of a healthy and varied diet* *prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques* *understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.*		
Year 3	**Cooking & Nutrition**	• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.	• 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.	• 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.	• 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 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.	**Climate ● Dry climate ● Exported ● Imported ● Mediterranean climate ● Nationality ● Nutrients ● Polar climate ● Recipe ● Seasonal food ● Seasons ● Temperate climate ● Tropical climate**
	Textiles	• Designing and making a template from an existing cushion and applying individual design criteria.	• 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)	• Evaluating an end product and thinking of other ways in which to create similar items.			**Accurate ● Applique ● Cross-stitch ● Cushion ● Decorate ● Detail ● Fabric ● Patch ● Running-stitch ● Seam ● Stencil ● Stuffing ● Target audience ● Target customer ● Template**

Design & Technology: Key Stage 2

Skills					Knowledge		
		Design	Make	Evaluate	Technical Knowledge	Additional Knowledge	Key Vocabulary
		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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*	*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 3	Electrical Systems	• 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.	• 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).	• 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.	• 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 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).	**Battery ● Bulb ● Circuit ● Circuit component ● Crocodile wires ● Electrical product ● Electrical system ● Final design ● Information design ● Initial ideas ● Peer assessment ● Research ● Self assessment ● Sketch**
	Digital World	• Problem solving by suggesting potential features on a Micro: bit and justifying my ideas. • Developing design ideas for a technology pouch. • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.	• Using a template when cutting and assembling the pouch. • Following a list of design requirements. • Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch. • Applying functional features such as using foam to create soft buttons. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.	• Analysing and evaluating an existing product. • Identifying the key features of a pouch.	• 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 what the 'Digital Revolution' is and features of some of the products that have evolved as a result. •To know that in Design and technology the term 'smart' means a programmed product. •To know the difference between analogue and digital technologies. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'.	**Analogue ● Badge ● CAD ● Control ● Design requirements ● Develop ● Digital ● Digital revolution ● Digital world ● Display ● Electronic ● Electronic products ● Fasten ● Feature ● Function ● Initiate ● Key features ● Layers ● Loops ● Micro: bit ● Monitor ● Net ● Point of sale ● Product ● Product design ● Program ● Sense ● Simulator ● Smart wearables ● Stand ● Technology ● Template ● Test ● User**

Design & Technology: Year 4

Term:	AUTUMN	SPRING	SUMMER
Unit:	**Electrical Systems:** Torches	**Mechanical Systems:** Slingshot Car	**Food:** Adapting a recipe
Link to Kapow Planning:	Unit Lesson Plans	Unit Lesson Plans	Unit Lesson Plans
Unit Outcomes:	Pupils who are secure will be able to: ● Identify electrical products and explain why they are useful. ● Help to make a working switch. ● Identify the features of a torch and how it works. ● Describe what makes a torch successful. ● Create suitable designs that fit the success criteria and their own design criteria. ● Create a functioning torch with a switch according to their design criteria.	Pupils who are secure will be able to: ● Work independently to produce an accurate, functioning car chassis. ● Design a shape that is suitable for the project. ● Attempt to reduce air resistance through the design of the shape. ● Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed. ● Construct car bodies effectively. ● Conduct a trial accurately and draw conclusions and improvements from the results.	Pupils who are secure will be able to: ● Describe features of biscuits using taste, texture and appearance. ● Follow a recipe with support. ● Use a budget to plan a recipe. ● Adapt a recipe using additional ingredients.
Lesson Objectives:	**L1:** I can learn about electrical items and how they work. **L2:** I can analyse and evaluate electrical products. **L3:** I can design a product to fit a set of specific user needs. **L4:** I can make and evaluate a torch.	**L1:** I can build a car chassis. **L2:** I can design a shape that reduces air resistance. **L3:** I can make a model based on a chosen design. **L4:** I can test and assemble my completed product.	**L1:** I can evaluate existing biscuit products. **L2:** I can prepare and cook a dish. **L3:** I can select ingredients and follow a budget. **L4:** I can take inspiration from existing products. **L5:** I can make and test prototype biscuits. **L6:** I can evaluate a final product.
Key Vocabulary for each Seesaw lesson:	**L1:** battery - bulb - buzzer - conductor - circuit diagram - electrical item - electricity - electronic item - insulator - series circuit - switch - wire **L2:** component - design criteria - evaluation - LED (light emitting diode) - shape - target audience - torch **L3:** conductor - design - design criteria - insulator - target audience **L4:** assemble - design criteria - evaluation - model - series circuit - test	**L1:** chassis - energy - kinetic - mechanism **L2:** air resistance - chassis - design - graphics - model - research - structure - template **L3:** air resistance - chassis - design - graphics - model - research - structure - template **L4:** air resistance - chassis - design - graphics - model - research - structure - template	**L1:** buttery - crunchy - ingredients - target audience - taste - texture **L2:** combine - cream - hygiene - sieve - sift - wooden spoon **L3:** addition - appearance - budget - design - ingredients - multiplication - pounds **L4:** construct - cuboid - cut - fold - layout - target audience **L5:** adapt - ingredients - modify - unique - market research **L6:** comment - compare - evaluate - opinion

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 4	**Structures**	• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight.	• 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.	• Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs.	• To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own.	• 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.	**Aesthetic ● Cladding ● Design criteria ● Evaluation ● Frame structure ● Function ● Inspiration ● Pavilion ● Reinforce ● Stable ● Structure ● Target audience ● Target customer ● Texture ● Theme**
	Mechanisms	• 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.	• Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design.	• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.	• 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.	• 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.	**Aesthetic ● Air resistance ● Chassis ● Design ● Design criteria ● Function ● Graphics ● Kinetic energy ● Mechanism ● Net ● Structure**

Design & Technology: Key Stage 2

Skills					Knowledge		
Design		**Make**	**Evaluate**		**Cooking & Nutrition**	**Textiles**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*		*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*		*understand and apply the principles of a healthy and varied diet* *prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques* *understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.*		
Year 4	**Cooking & Nutrition**	• Designing a biscuit within a given budget, drawing upon previous taste testing judgements.	• 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).	• 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).	• 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.	• 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.	**Adapt ● Budget ● Cooling rack ● Creaming ● Equipment ● Evaluation ● Flavour ● Ingredients ● Method ● Net ● Packaging ● Prototype ● Quantity ● Recipe ● Rubbing ● Sieving ● Target audience ● Unit of measurement ● Utilities**
	Textiles	• Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve.	• 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.	• 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.			**Aesthetic ● Assemble ● Book sleeve ● Design criteria ● Evaluation ● Fabric ● Fastening ● Mock-up ● Net ● Running-stitch ● Stencil ● Target audience ● Target customer ● Template**

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 4	**Electrical Systems**	• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.	• 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.	• Evaluating electrical products. • Testing and evaluating the success of a final product	• 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.	• 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.	**Battery ● Bulb ● Buzzer ● Cell ● Component ● Conductor ● Copper ● Design criteria ● Electrical item ● Electricity ● Electronic item ● Function ● Insulator ● Series circuit ● Switch ● Test ● Torch ● Wire**
	Digital World	• 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.	• Developing a prototype case for my mindful moment timer. • Creating a 3D structure using a net. • Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press.	• 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.	• 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.	•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.	**2D ● Advantage ● Assemble ● Block ● Brand identity ● Branding ● Bug ● CAD ● Cheap ● Clipart ● Coding ● Criteria ● Debug ● Design ● Develop ● Disadvantage ● Ergonomic ● Evaluate ● Form ● Function ● Instructions ● Join ● Logo ● Loop ● Mindfulness ● Model ● Net ● Pause ● Process ● Program ● Prototype ● Research ● Sketchpad ● Template ● Test ● Timer ● User ● Variable**

Design & Technology: Year 5

Term:	AUTUMN	SPRING	SUMMER
Unit:	**Food:** What could be healthier?	**Structure:** Bridges	**Mechanical Systems:** Pop-up book
Link to Kapow Planning:	Unit Lesson Plans	Unit Lesson Plans	Unit Lesson Plans
Unit Outcomes:	Pupils who are secure will be able to: • Understand how beef gets from the farm to our plates. • Present a subject as a poster with clear information in an easy to read format. • Contribute ideas as to what a 'healthy meal' means. • Notice the nutritional differences between different products and recipes. • Recognise nutritional differences between two similar recipes and give some justification as to why this is. • Work as a team to amend a bolognese recipe with healthy adaptations. • Follow a recipe to produce a healthy bolognese sauce. • Design packaging that promotes the ingredients of the bolognese.	Pupils who are secure will be able to: • Identify stronger and weaker shapes. • Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight. • Identify beam, arch and truss bridges and describe their differences. • Use triangles to create simple truss bridges that support a load (weight). • Cut beams to the correct size, using a cutting mat. • Smooth down any rough cut edges with sandpaper. • Follow each stage of the truss bridge creation as instructed by their teacher. • Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher. • Identify some areas for improvement, reinforcing their bridges as necessary.	Pupils who are secure will be able to: • Produce a suitable plan for each page of their book. • Produce the structure of the book. • Assemble the components necessary for all their structures/mechanisms. • Hide the mechanical elements with more layers using spacers where needed. • Use a range of mechanisms and structures to illustrate their story and make it interactive for the users. • Use appropriate materials and captions to illustrate the story.
Lesson Objectives:	**L1:** I can understand where food comes from. **L2:** I can understand the term 'healthy'. **L3:** I can adapt a traditional recipe. **L4:** I can complete a food product.	**L1:** I can explore how to reinforce a beam (structure) to improve its strength. **L2:** I can build a spaghetti truss bridge. **L3:** I can build a wooden truss bridge. **L4:** I can complete, reinforce and evaluate my truss bridge.	**L1:** I can design a pop-up book. **L2:** I can follow my design brief to make my pop-up book. **L3:** I can use layers and spacers to cover the working of mechanisms. **L4:** I can create a high-quality product suitable for a target user.
Key Vocabulary for each Seesaw lesson:	**L1:** Beef - Reared - Processed - Ethical - Diet - Ingredients - Supermarket - Farm **L2:** Beef - Reared - Processed - Ethical - Diet - Ingredients - Supermarket - Farm - Balanced **L3:** Beef - Reared - Processed - Ethical - Diet - Ingredients - Supermarket - Farm - Balanced **L4:** Beef - Reared - Processed - Ethical - Diet - Ingredients - Supermarket - Farm - Balanced	**L1:** arch bridge - beam bridge - corrugation, lamination - rigid, stif - strength - technique **L2:** aesthetics - factors - joint - stability - stiffness - strength - truss bridge **L3:** assemble - bench hook/vice - hardwood - material properties - mark out - sandpaper - softwood - tenon saw/coping saw - truss bridge - wood file/rasp **L4:** accuracy - evaluate - joints - quality of finish - reinforce - wood sourcing	**L1:** design brief - input - lever - mechanism - motion - output - pivot - slider - spacers - structure **L2:** layer - lever - mechanism - model - slider - spacers - structure **L3:** aesthetic - layers - spacers **L4:** aesthetic - caption - function

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 5	**Structures**	• Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation.	• 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.	• 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.	• 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 understand the difference between arch, beam, truss and suspension bridges. • To understand how to carry and use a saw safely.	**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**
	Mechanisms	• 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.	• 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.	• Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.	• 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 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.	**Aesthetic ● Computer-aided design (CAD) ● Caption ● Design ● Design brief ● Design criteria ● Exploded-diagram ● Function ● Input ● Linkage ● Mechanism ● Motion ● Output ● Pivot ● Prototype ● Slider ● Structure ● Template**

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Cooking & Nutrition**	**Textiles**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*understand and apply the principles of a healthy and varied diet* *prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques* *understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.*		
Year 5	**Cooking & Nutrition**	• 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.	• 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.	• Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.	• 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 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.	**Beef ● Cross-contamination ● Diet ● Ethical issues ● Farm ● Healthy ● Ingredients ● Method ● Nutrients ● Packaging ● Reared ● Recipe ● Research ● Substitute ● Supermarket ● Vegan ● Vegetarian ● Welfare**
	Textiles	• Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components.	• 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.	• Testing and evaluating an end product and giving point for further improvements.			**Accurate ● Annotate ● Appendage ● Blanket-stitch ● Design criteria ● Detail ● Evaluation ● Fabric ● Sew ● Shape ● Stuffed toy ● Stuffing ● Template**

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 5	**Electrical Systems**	• 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.	• 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.	• 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.	• 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 product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged.	**Circuit component ● Configuration ● Current ● Develop ● DIY ● Investigate ● Motor ● Motorised ● Problem solve ● Product analysis ● Series circuit ● Stable ● Target user**
	Digital World	• 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.	• 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.	• 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.	• 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 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.	**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**

Design & Technology: Year 6

Term:	AUTUMN	SPRING	SUMMER
Unit:	**Electrical Systems:** Steady Hand Game	**Mechanical Systems:** Automata Toys	**Structures:** Making Playgrounds
Link to Kapow Planning:	Unit Lesson Plans	Unit Lesson Plans	Unit Lesson Plans
Unit Outcomes:	Pupils who are secure will be able to: • Explain simply what is meant by 'form' (the shape of a product) and 'function' (how a product works). • State what they like or dislike about an existing children's toy and why. • Learn about skills developed through play and apply this knowledge in a survey of one or more children's toys. • Identify the components of a steady hand game. • Design a steady hand game of their own according to their design criteria, using four different perspective drawings. • Create a secure base for their game, with neat edges, that relates to their design. • Make and test a functioning circuit and assemble it within a case.	Pupils who are secure will be able to: • Mark, saw and cut out the components and supports of their toy with varying degrees of accuracy to the intended measurements. • Follow health and safety rules, taking care with the equipment. • Attempt a partial assembly of their toys using an exploded diagram following a teacher's demonstration. • Develop a design idea with some descriptive notes. • Explore different cam profiles and choose three for their follower toppers with an explanation of their choices. • Create neat, decorated follower toppers with some accuracy. • Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata. • Decorate and finish the automata to meet the design criteria and brief. • Evaluate their finished product, making descriptive and reflective points on function and form.	Pupils who are secure will be able to: • Create five apparatus designs, applying the design criteria to their work. • Make suitable changes to their work after peer evaluation. • Make roughly three different structures from their plans using the materials available. • Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas. • Secure their apparatus to a base. • Make a range of landscape features using a variety of materials which will enhance their apparatus.
Lesson Objectives:	**L1:** I can research and analyse a range of children's toys. **L2:** I can design a steady hand game. **L3:** I can construct a stable base. **L4:** I can assemble electronics and complete their electronic game.	**L1:** I can create design criteria to meet a user's needs. **L2:** I can use an exploded diagram to assemble a frame. **L3:** I can explore a mechanism to inform a design decision. **L4:** I can evaluate a completed design.	**L1:** I can design a playground with a variety of structures. **L2:** I can build a range of structures. **L3:** I can improve and add detail to structures. **L4:** I can create a surrounding landscape.
Key Vocabulary for each Seesaw lesson:	**L1:** benefit - fine motor skills - fit for purpose - form - function - gross motor skills - research - user **L2:** buzzer - circuit - copper - design criteria - electricity - net - side view drawing - top view drawing **L3:** assemble - design criteria - net - stable - tabs **L4:** assemble - battery - bulb - buzzer - circuit - pliers - switch - test	**L1:** accurate - automata - bench hook - component - design brief - design criteria **L2:** communication - designer - diagram - exploded diagram - visual **L3:** axle - cam - cam profile - cross-sectional diagram - dowel - follower - mechanism **L4:** evaluate - form - function - housing - storefront	**L1:** apparatus - design criteria - equipment - landscape features - plan view - playground **L2:** bench hook - mark out - modify - prototype - reinforce - tenon saw - user **L3:** cladding - dowel - jelutong - reinforce - structure **L4:** design criteria - natural materials - prototype - user

Design & Technology: Key Stage 2

Skills					Knowledge		
Design			**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*			*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 6	**Structures**	• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.	• 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.	• 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.	• To know that structures can be strengthened by manipulating materials and shapes.	• 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.	**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**
	Mechanisms	•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.	• 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.	• 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.	• 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.	• 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.	**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 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 ● Mark out ● Measure ● Mechanism ● Model ● Research ● Right-angle ● Set square ● Tenon saw**

Design & Technology: Key Stage 2

Skills					Knowledge		
		Design	**Make**	**Evaluate**	**Cooking & Nutrition**	**Textiles**	**Key Vocabulary**
		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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*	*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*understand and apply the principles of a healthy and varied diet* *prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques* *understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.*		
Year 6	**Cooking & Nutrition**	• Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken.	• 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.	• 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.	• 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).	• 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.	**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**
	Textiles	• Designing a waistcoat in accordance to a specification linked to set of design criteria. • Annotating designs, to explain their decisions.	• 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.	• Reflecting on their work continually throughout the design, make and evaluate process.			**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**

Design & Technology: Key Stage 2

		Skills			Knowledge		
		Design	**Make**	**Evaluate**	**Technical Knowledge**	**Additional Knowledge**	**Key Vocabulary**
		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 *generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design*	*select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately* *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*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*		
Year 6	**Electrical Systems**	• 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'.	• 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.	• 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.	• 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.	•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'.	**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 ● Insulator ● LED ● User**
	Digital World	• 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.	• 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.	• 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.	• 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.	• 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.	**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**