



SHOBNALL PRIMARY & NURSERY SCHOOL

DESIGN AND TECHNOLOGY PROGRAMME OF STUDY



LONG TERM OVERVIEW FOR DESIGN AND TECHNOLOGY

KEY: DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION

Nursery	Autumn Term	Spring Term	Summer Term
Topic			
Key Area	Structures	Decoration	Textiles
EYFS Magnificent 7 Goals	Create a Picture Children create visual representations with increasing complexity and detail.	Create a Picture Children create visual representations with increasing complexity and detail.	Create a Picture Children create visual representations with increasing complexity and detail.
Development Matters Objectives	<u>Understanding the World</u> - Explore the natural world around them. - Describe what they see, hear and feel whilst outside. - Understand the effect of the changing seasons on the natural world around them. ELG: The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants ELG: The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. <u>Expressive Arts and Design</u> - Explore, use and refine a variety of artistic effects to express their ideas and feelings. ELG: Creating with Materials: Safely use and explore a	<u>Physical Development</u> - Develop their small motor skills so that they can use a range of tools competently, safely and confidently. <u>Expressive Arts and Design</u> - Explore, use and refine a variety of artistic effects to express their ideas and feelings. - Return to and build on their previous learning, refining ideas and developing their ability to represent them. ELG: Creating with Materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. ELG: Creating with Materials: Share their creations, explaining the process they have used.	<u>Physical Development</u> - Develop their small motor skills so that they can use a range of tools competently, safely and confidently. ELG: Fine motor skills: Use a range of small tools, including scissors, paint brushes and cutlery. <u>Expressive Arts and Design</u> - Explore, use and refine a variety of artistic effects to express their ideas and feelings. - Return to and build on their previous learning, refining ideas and developing their ability to represent them. ELG: Creating with Materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

	variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.		ELG: Creating with Materials: Share their creations, explaining the process they have used.
Vocabulary	autumn, season, weather, leaves, frost, cold, brown, crunchy, wet, hibernate, hibernation, dormouse, hedgehog, black bear, bumble bee, tortoise, frog, fish	design, plan, create, Easter, egg, chocolate, Jesus, Christian, Bible, pattern, colour, shape	thread, punch, pinch, push, pull, through, under, over, up, down, pattern
Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		
Observations	Are the pupils able to describe what they see, hear and feel whilst outside? Can they talk about autumn and the effect of the changing seasons, identifying some signs of autumn? Are the pupils able to explain what hibernation is and why some animals may need a safe place to rest over winter? Can they talk about their design and finished model, explaining what they have included and why?	Can the pupils talk about why we have Easter eggs? Are the pupils able to recognise problems and overcome them during the creation process? Can they talk about their design and their finished egg, explaining what they have chosen to use and why?	Are the pupils able to use their flat hand and shoulder/arm strength to use the hole punch effectively? Do the children demonstrate good fine motor skills when threading? Are they accurate? Can they hold their hand steady? Can they talk about their finished flower, explaining what they have chosen to use and why? Can they identify any difficulties they had?

LONG TERM OVERVIEW FOR DESIGN AND TECHNOLOGY

KEY: DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION

Reception	Autumn Term	Spring Term	Summer Term
Topic			
Key Area	Food	Textiles	Structures
EYFS Magnificent 7 Goals	Follow a Recipe Children follow a clear sequence of steps with increasing independence.	Shine Like an Artist Children can create more complex and detailed pieces of artwork, combining imagination, observation, and inspiration from artists, and can discuss their process and intentions.	Shine Like an Artist Children can create more complex and detailed pieces of artwork, combining imagination, observation, and inspiration from artists, and can discuss their process and intentions.
Development Matters Objectives	<u>Communication and Language</u> - Learn new vocabulary. - Use new vocabulary throughout the day. ELG: Speaking: Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. <u>Personal, Social and Emotional Development</u> - Know and talk about the different factors that support their overall health and wellbeing: healthy eating. ELG: Managing self: Manage their own basic hygiene and personal needs, including...understanding the importance of healthy food choices. <u>Understanding the World</u> - Explore the natural world around them.	<u>Physical development</u> - Develop their small motor skills so that they can use a range of tools competently, safely and confidently. ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery. <u>Expressive Arts and Design</u> ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	<u>Communication and Language</u> - Articulate their ideas and thoughts in well-formed sentences. - Connect one idea or action to another using a range of connectives. - Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. ELG: Speaking: Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary ELG: Speaking: Offer explanations for why things might happen. <u>Understanding the World</u> - Explore the natural world around them.

	• ELG: The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. <u>Physical Development</u> • Develop small motor skills so that they can use a range of tools competently, safely and confidently. • ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery. <u>Expressive Arts and Design</u> • Explore, use and refine a variety of artistic effects to express ideas and feelings. • ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.		• ELG: The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. <u>Expressive Arts and Design</u> • Explore, use and refine a variety of artistic effects to express their ideas and feelings. • ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • ELG: Creating with materials: Share their creations, explaining the process they have used.
Vocabulary	seeds, roots, leaves, stem, plant, flower, bud, juicy, sweet, bitter, chewy, pumpkin, heavy, bumpy, rough, smooth, hard, spiky, big, huge, orange, soft, seedy, squashy, stringy, wet, slimy, squelchy, hollow, carrot, sweetcorn, garlic, onion, potato, leek, spinach, peas, butternut squash, broccoli, safety, knife, blade, sharp, tool, edge, handle, chop, slice, cut, saucepan, blender, knife, chopping board, hob, boil, blend, mix, soup, creamy, sour, dry, wet, watery, delicious, packaging, tin, carton, pouch, lidded cup, barcode, ingredients, cardboard, metal, plastic, recyclable, reusable	thread, weave, pinch, push, pull, through, under, over, up, down, pattern, weave, sew, sewing needle, wool, thread, hessian, bookmark, embroider, sew, Victorian, design, reflect, evaluate, think	waterproof, material, absorb, leak, wet, dry, prediction, variable, experiment, investigation, variable, fair test, float, sink, boat, cruise ship, fishing boat, kayak, ocean liner, pirate ship, ship, watercraft, sail, anchor, hull, mast, rudder, helm, poop deck, deck, crow's nest, junk, reeds

Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		
Observations	Are the pupils able to use adjectives to describe the fruits and vegetables and how they look, feel, smell and taste?	Do the children demonstrate good fine motor skills when threading? Are they accurate? Can they hold their hand steady?	Can the pupils articulate their thoughts, making predictions and observations?
	Can the pupils name some fruits and vegetables?	Are the pupils able to weave the ribbon independently or do they require help?	Do the pupils work together to explore the materials' properties? Can the pupils articulate their thoughts, making predictions and observations?
	Are they able to tell the difference between fruits and vegetables with some support?	Do the pupils use the beads or ribbons to make a pattern?	Do the pupils work together to explore whether the objects float or sink?
	Can the pupils recall any elements from the story?	Are the pupils able to use the scissors to cut along the lines, stopping at the correct point?	Can the pupils participate in the class and one-to-one discussions, offering their own ideas and use recently introduced vocabulary?
	Are they able to use their senses to describe the pumpkin?	Are the pupils able to weave the paper with the correct over-under, under-over technique?	Can the pupils offer explanations as to how different types of boats are used?
	Can the pupils recall any elements from the story?	Do the pupils make a pattern with the paper?	Can the pupils participate in the class and one-to-one discussions, offering their own ideas and use recently introduced vocabulary?
	Are they able to use their senses to describe the pumpkin?	Are the pupils able to hold the needle and push it through the hessian, pulling it out the other side?	Can the pupils offer explanations as to why certain containers are better at floating or moving across the water?
	Are the children able to follow the knife safety rules?	Do the pupils persevere when they find something challenging?	Do the pupils create a simple design with thought about the materials they will have available to them?
	Can the pupils attempt to chop the playdough using the knife? Do they have any success?	Can they begin to sew along a line, even if the stitches aren't straight or close together?	Do the pupils refer back to their previous learning to help them make decisions about their design?
	Are the pupils able to use a knife to prepare the softened fruits and vegetables with adult support?	Are the pupils able to talk about the different bookmark designs and make observations about what they notice?	Can the pupils identify problems and suggest ways to solve them as they arise?

	Can the pupils talk about whether the recipe was successful or not and if they would change anything? Are the pupils able to create their own soup packaging design, using the real-life example as inspiration? Can the pupils identify various elements on each package? Can the pupils discuss why different packages might be used?	Do the pupils create a simple design with thought about the materials they will have available to them? Are the pupils able to select the correct colours to create their bookmark, based upon their design? Are they able to transfer their design to the fabric, keeping the design the same? Are the pupils able to hold the needle and push it through the hessian, pulling it out the other side? Do the pupils persevere when they find something challenging? Can they begin to sew along a line, even if the stitches aren't straight or close together? Are the pupils able to reflect upon their design and their finished bookmark?	Do the pupils refer back to their previous learning to help them make decisions about how to join and manipulate materials? Can the pupils verbally evaluate their final product?
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LONG TERM OVERVIEW FOR DESIGN AND TECHNOLOGY

KEY: DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION

Year 1	Autumn Term	Spring Term	Summer Term
Topic	LAND OF HOPE AND GLORY	TO INFINITY AND BEYOND!	WHERE THE WILD THINGS ARE
Key Area	Structures	Food	Textiles
Kapow Unit	Stable Structures	Fruit and Vegetable Smoothies	Puppets
Focus	Technical Skill & Knowledge		Design
NC Objectives	- The user is the person who will use the product. - Different users may want different things from a design. - Who they are designing for makes a difference to what they design. - The purpose is what something is for. - Existing products can help when deciding what to design. - Drawings are a way to explain ideas. - A plan is deciding what to do first and next. - Different equipment does different things. - Names of common pieces of equipment. - Some tools are sharp like scissors and knives. - Spacing cuts or marks evenly can be useful. - Different glue can be used to join different things. - Some products will be better than others. - Their ideas or products can be made better. - Their ideas can make someone else's work better. - Other people's ideas can help make their work better. - A structure is something that has been made and put together. - Stable structures do not topple.	- 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. - Evaluate their ideas and products against design criteria. - Understand where food comes from.	- 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. - Evaluate their ideas and products against design criteria.

	- Shapes and structures with wide, flat bases or legs are the most stable. - Adding weight to the base of a structure can make it more stable.		
Intended Outcomes	Explain that structures are things that are built and have a purpose. Understand that structures with a wider base are more stable than ones with a narrow base. Explain that extra weight added to the base of a structure makes it more stable. Design a product for a particular user. Use a sketch to show ideas. Choose the best method for joining the parts of the product. Make evenly spaced cuts. Use scissors to cut out a shape neatly and accurately. Explain what they like and dislike about their final product.	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.	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.
Sequencing	Lesson 1: Explore stability (To explore stability by balancing). Lesson 2: Building stable towers. (To explore wide or narrow bases by building towers). Lesson 3: Stabilising structures with weight. (To test a structure's stability with weight added in different places). Lesson 4: Designing a stable pencil pot. (To design a stable structure that meets the needs of a user). Lesson 5: Making a stable pencil pot. (To use a variety of cutting and joining techniques to make a stable product). Use KS1 Evaluation sheet at the end of the unit.	Lesson 1: Fruits (To identify fruits). Lesson 2: Growing (To describe where fruits and vegetables grow). Lesson 3: Cutting and juicing (To practise food preparation skills). Lesson 4: Testing ingredients (To select ingredients for a recipe). Lesson 5: Making smoothies (To apply food preparation skills to a recipe). Lesson 6: Evaluating (To evaluate against the design brief). Use KS1 Evaluation sheet at the end of the unit.	Lesson 1: Joining fabrics (To join fabrics together using different methods). Lesson 2: Designing my puppet (To use a template to create my design). Lesson 3: Making and joining my puppet (To join two fabrics together accurately). Lesson 4: Decorating my puppet (To embellish my design using joining methods). Use KS1 Evaluation sheet at the end of the unit.
Vocabulary	base, better, compare, design, freestanding, stable, structure, unstable, user, worse	blender, carton, fruit, healthy, ingredients, peel, peeler, recipe, slice, smoothie, stencil, template, vegetable	decorate, design, fabric, glue, model, hand puppet, safety pin, staple, stencil, template
Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		

Cross-Curricular Links	Science: Working scientifically; Everyday materials. Physical education Art British Values: Mutual respect.	Science: Thinking scientifically: classifying fruit and vegetables. Animals, including humans: learning about the importance of fruit and vegetables in the diet and food hygiene.	Reading: listening to and answering questions about the main character's appearance in Little Red Riding Hood.
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LONG TERM OVERVIEW FOR DESIGN AND TECHNOLOGY

KEY: DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION

Year 2	Autumn Term	Spring Term	Summer Term
Topic	FIRE, FIRE!	I HAVE A DREAM	GADGETS AND GIZMOS
Key Area	Structure	Textiles	Mechanisms
Kapow Unit	Baby Bear's Chair	Pouches	Lever
Focus	Technical Skill & Knowledge	Design	Design
NC Objectives	-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. - Evaluate their ideas and products against design criteria. -Build structures, exploring how they can be made stronger, stiffer and more stable.	-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.	-Creating ideas with design criteria in mind. -Referring to specific parts of existing products when generating ideas. -Using labels to explain parts of a design, label materials etc, including using ICT. -Integrating moving parts when creating mock-ups. -Integrating moving parts when creating mock-ups. -Planning more than one step ahead. -Choosing materials or components from a wider range of materials or components. -Choosing between pieces of equipment that are used for the same purpose (e.g. joining) and explaining why their choice suits the task. -Explaining their choices based on the properties of materials and components. -Following and recalling simple safety instructions. -Discussing whether they were able to use the tools and techniques effectively. -Comparing a range of products and explaining why some better meet different design criteria than others. -Evaluating their ideas and creations against simple design criteria.

			-Recognising and exploring everyday objects that have mechanisms. -Exploring everyday objects that use levers (e.g scissors, tongs, door handle, stapler).
Intended Outcomes	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.	Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. Prepare and cut fabric to make a pouch from a template. Use a running stitch to join the two pieces of fabric together. Decorate their pouch using the materials provided.	Identify lever mechanisms and describe their movements. Find pivots and levers on various mechanisms. Join materials together to make levers. Investigate what happens when the pivot changes place. Select appropriate materials to use to make levers work effectively. Understand how levers can help make tasks easier. Test the effectiveness of their own levers. Evaluate their and others' designs and give feedback.
Sequencing	Lesson 1: Exploring stability (To explore the concept and features of structures and the stability of different shape). Lesson 2: Strengthening materials (To understand that the shape of structure affects its strength). Lesson 3: An introduction to tinkerCAD - not KAPOW planning (To create 3D shape on tinkerCAD and test their stability and strength). Lesson 4: Make Baby Bear's chair on TinkerCAD – not KAPOW planning (To make a structure according to a design criteria). Lesson 5: Make Baby Bear's chair (To make a structure according to a design criteria). Lesson 6: Fixing and testing Baby Bear's chair (To produce a finished structure and evaluate its strength, stiffness and stability). Use KS1 Evaluation sheet at the end of the unit.	Lesson 1: Running stitch (To use a running stitch). Lesson 2: Using a template (To sew a running stitch). Lesson 3: Designing a pouch – not KAPOW planning (To design a pouch inspired by). Lesson 4: Make a pouch (To join fabrics using a running stitch). Lesson 5: Decorating a pouch (To decorate a pouch using fabric glue or stitching). Use KS1 Evaluation sheet at the end of the unit.	Lesson 1: Seesaws (To describe how seesaws are a simple lever). Lesson 2: Levers in action (To build and test a simple lever). Lesson 3: Scissors (To describe scissors as a mechanism with two levers). Lesson 4: Two levers together (To make mechanisms with two levers). Lesson 5: Everyday levers (To design levers for everyday use). Use KS1 Evaluation sheet at the end of the unit.
Vocabulary	function, man-made, mould, natural, stable, stiff, strong, structure, test, weak	axle, axle holder, chassis, design, evaluation, fix, mechanic, mechanism, model, test, wheel	curved, direction, evaluate, label, lever, material, mechanism, pivot, purpose, rotate, select

Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		
Cross-Curricular Links	Reading: discussing the events from 'Goldilocks and the three bears. Maths: Creating 3D shapes from playdough, Recording totals on a tally chart. Science: Interpreting the results of the tip-test. Geography - Identifying natural and man-made structures.	Art and Design: Decorating the pouch using a range of materials.	Science: Working scientifically; Everyday materials; Uses of everyday materials. Maths: Geometry – position and direction. Physical Education British values: Mutual respect.

LONG TERM OVERVIEW FOR DESIGN AND TECHNOLOGY

KEY: DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION

Year 3	Autumn Term	Spring Term	Summer Term
Topic	MEET THE FLINTSTONES	BY THE RIVERS OF BABYLON	IRON MAN
Key Area	Electrical Systems	Textiles	Structures
Kapow Unit	Electronic Poster	Cross-stitch applique: Cushions	Castles
Focus	Technical Skill & Knowledge	Design – Art & Craft Inspired	Design – Art Nouveau
NC Objectives	- 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. - Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].	- 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.	- 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. -Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

Intended Outcomes	Explain what 'information design' is and understand its impact, considering what could happen if we had no signage, posters, or written communication in public places of interest. Research and choose a specific Ancient Roman topic on which to base their initial poster ideas. Complete design criteria based on a client's request. Roughly sketch four initial poster ideas, indicating where a bulb will be located for each. Review their initial ideas against the design criteria and peer feedback, developing a final design. Assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration. Acknowledge, with a brief explanation, the need to mount the poster using corrugated card. Test that the simple circuit works by adding a battery. Evaluate their electric posters in a letter to a client.	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.	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.
Sequencing	Lesson 1: Information design (To understand the purpose of information design). Lesson 2: Topic research (To research a set topic to develop a range of initial ideas). Could this be linked to the wider curriculum topic like history? Lesson 3: Design development (To develop an initial idea into a final design). Lesson 4: Simple circuit – Not KAPOW planning (To develop a simple circuit). Lesson 5: Electronic poster assembly (To assemble my final product and incorporate a simple circuit). Use KS2 Evaluation sheet at the end of the unit.	Lesson 1: Cross-stitch and applique (To learn how to sew cross-stitch and applique). Lesson 2: Art and craft design movement- not KAPOW planning (To explore the art and craft design movement and explore existing products). Lesson 3: Cushion design (To design a product and a template). Incorporate the art and craft design as a stimulus and influence. Lesson 4: Decorating my cushion (To decorate fabric using applique and cross-stitch). Lesson 5: Assembling my cushion (To assemble and complete the cushion). Use KS2 Evaluation sheet at the end of the unit.	Lesson 1: Features of a castle (To recognise how multiple shapes are combined to form a strong and stable structure). Lesson 2: Art Nouveau design movement – not KAPOW planning (To explore the Art Nouveau design movement and explore existing products). Lesson 3: Designing a castle (To design a castle) Incorporate the Art Nouveau design as a stimulus and influence. Lesson 4: Designing on TinkerCAD – Not KAPOW planning (To build and test their castle on TinkerCAD). Lesson 5: Nets and Structures (To construct 3D nets). Lesson 6: Building a castle (To construct and evaluate my final product).

			Use KS2 Evaluation sheet at the end of the unit.
Vocabulary	battery, bulb, circuit, circuit component, crocodile wires, electrical product, electrical system, final design, information design, initial ideas, peer assessment, research, self-assessment, sketch	accurate, applique, cross-stitch, cushion, decorate, detail, fabric, patch, running-stitch, seam, stencil, stuffing, target audience, target customer, template	2D shapes, 3D shapes, castle, design criteria, evaluate, façade, feature, flag, net, recyclable, scoring, stable, strong, structure, tab, weak
Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		
Cross-Curricular Links	Science (Electricity Y4): building a simple circuit and identifying components of a circuit. History: Creating posters that give information about Ancient Rome.	Maths: choosing a 2D shape for their cushion, using knowledge of length to leave correct space for stuffing, seam and running stitch length. Art and Design: designing a theme for their applique shapes.	Maths: Identifying and naming 2D and 3D shapes in castle structures, drawing 2D shapes, constructing nets to make 3D shapes. Computing: Using powerpoint to create their own net (extension activity). History: Learning about the features of castles and their purpose.

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Year 4	Autumn Term	Spring Term	Summer Term
Topic	THE EMPIRE STRIKES BACK	GAME OF THRONES	ANY DREAM WILL DO
Key Area	Mechanical Systems	Food	Digital World
Kapow Unit	Slingshot Cars	Adapting a Recipe	Mindful Moments Timer
Focus	Design – De Stijl Inspired		Technical Skill & Knowledge
NC Objectives	-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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. -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.	-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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. -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.	- 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. - Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. - 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. - Apply their understanding of computing to program, monitor and control their products.

	-Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].	-Prepare and cook variety of predominantly savoury dishes using a range of cooking techniques.	
Intended Outcomes	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.	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.	State and/or describe the advantages and disadvantages of existing products (timers). Understand how virtual micro:bit features could be used as part of a design idea. Use research to inform design criteria. Write a program that displays a timer on the virtual micro:bit based on their chosen seconds/minutes. Suggest where the errors are, if testing is unsuccessful, by comparing the correct code to their own. State key functions in the program editor (e.g. loops). Evaluate the immediate appeal of the virtual micro:bit timer and how it might function. Express which stages of the project they enjoyed or found more challenging. Explain the need for a company to stand out against competition and/or state the importance of logos in business. Recall and describe the name and use of key tools used in Sketchpad (CAD) software. Fulfil the design requirements of the logo. Evaluate the product using feedback from the user.
Sequencing	Lesson 1: Chassis and launch mechanism (To build a car chassis). Lesson 2: De Stijl design movement – not KAPOW planning (To explore the De Stijl design movement and explore existing products). Lesson 3: Designing the car body (To design a shape that reduces air resistance). Incorporate the De Stijl design as a stimulus and influence. Lesson 4: Making the car body (To make a model based on a chosen design). Lesson 5: Assembly and testing (To assemble and test my product).	Lesson 1: Existing biscuits (To evaluate existing biscuit products). Lesson 2: Basic biscuits (To prepare and cook a dish). Lesson 3: Budgeting (To select ingredients and follow a budget). Lesson 4: Packaging (To take inspiration from existing products). Lesson 5: Marketing (To make and test a prototype biscuit). Lesson 6: Evaluating biscuits (To evaluate a final product).	Lesson 1: Analyse timers (To evaluate existing products). Lesson 2: Designing for the user (To develop a design criteria). Lesson 3: Programming the timer (To program and control a product). Lesson 4: Prototypes (To develop and communicate ideas). Lesson 5: Brand identify (To develop ideas through computer-aided design). Lesson 6: An exhibition (To consider feedback and evaluate). Could this be incorporated into a class assembly?

	Use KS2 Evaluation sheet at the end of the unit.	Use KS2 Evaluation sheet at the end of the unit.	Use KS2 Evaluation sheet at the end of the unit.
Vocabulary	aesthetic, air resistance, chassis, design, design criteria, function, graphics, kinetic energy, mechanism, net, structure	adapt, addition, budget, buttery, Combine, comment, construct, cream, crunchy, cuboid, fold, hygiene, layout, market research, modify, multiplication, opinion, pounds, sieve, sift, target audience, texture, unique, wooden spoon	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
Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		
Cross-Curricular Links	Maths: Using nets to create 3D shapes, measuring accurately. Science (Forces): understanding the concept of air resistance (Y5) when designing their car. Art and Design: Decorating the panels of the chassis. Geography: Considering eco-friendly ways of powering cars. History: Considering life before the motor car.	Spoken language: giving a brief pitch for their biscuit recipe. Maths: Completing a budget, considering profit margins, using nets to create 3D packages. RSE/PHSE: Following basic food hygiene.	Maths: creating a 3D structure using a net. Art and design: decorating their mindful moments timer case. Computing: programming a micro:bit to function as a timer, debugging code, using software to create logos. RSE/PSHE: sharing ways to be mindful and how this helps us to look after our mental health.

LONG TERM OVERVIEW FOR DESIGN AND TECHNOLOGY

KEY: DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION

Year 5	Autumn Term	Spring Term	Summer Term
Topic	OFF WITH THEIR HEADS!	EXPELLIARMUS	HOUSE OF WISDOM
Key Area	Textiles	Food	Digital World
Kapow Unit	Stuffed Toys	Come Dine with Me	Monitoring Devices
Focus	Design – Pop Art Inspired		Technical Skill & Knowledge
NC Objectives	- 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - 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.	-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. -Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. -Understand and apply principles of a healthy and varied diet.	-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. -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. -Apply their understanding of computing to program, monitor and control their products.

		-Prepare and cook 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.	
Intended Outcomes	Design a stuffed toy, considering the main component shapes of their toy. Create an appropriate template for their stuffed toy. Join two pieces of fabric using a blanket stitch. Neatly cut out their fabric. Use appliqué or decorative stitching to decorate the front of their stuffed toy. Use blanket stitch to assemble their stuffed toy, repairing when needed. Identify what worked well and areas for improvement.	Find a suitable recipe for their course. Record the relevant ingredients and equipment needed. Follow a recipe, including using the correct quantities of each ingredient. Write a recipe, explaining the process taken. Explain where certain key foods come from before they appear on the supermarket shelf.	Describe what is meant by monitoring devices and provide an example. Explain briefly the development of thermometers from thermoscopes to digital thermometers. Research a chosen animal's key information to develop a list of design criteria for an animal monitoring device. Write a program that monitors the ambient temperature and alerts someone when the temperature moves from a specified range. Identify errors (bugs) in the code and ways to fix (debug) them. State one or two facts about the history and development of plastic, including how it is now affecting planet Earth. Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model. Explain key pros and cons of virtual modelling vs physical modelling. Recall and describe the name and use of key tools used in Tinkercad (CAD) software.
Sequencing	Lesson 1: Pop art design movement – not KAPOW planning (To explore the pop art design movement and explore existing products). Lesson 2: Design a stuffed toy (To design a stuffed toy). Incorporate the Pop Art design as a stimulus and influence. Lesson 3: Blanket stitch (To sew a blanket stitch). Lesson 4: Details and appendages (To create and add decorations to fabric).	Lesson 1: Complementary flavours (To explain the use of complementary flavours). Lesson 2: Three ingredients, three courses (To research and design a three-course meal). Lesson 3: Ingredients and skills (To explain recipe choices). Lesson 4: To start... (To apply culinary skills and knowledge). Lesson 5: The main course (To apply culinary skills and knowledge).	Lesson 1: Monitoring devices (To carry out research to develop design criteria). Lesson 2: Programming an animal monitor (To write a program to monitor the ambient temperature, including an alert). Lesson 3: Plastic (To generate creative and unique micro-bit case, stand or housing ideas). Lesson 4: 3D CAD Skills (To learn about and practice 3D CAD Skills). Use KS2 Evaluation sheet at the end of the unit.

	Lesson 5: Stuffed toy assembly (To use a blanket stitch to assemble the components of a stuffed toy). Use KS2 Evaluation sheet at the end of the unit.	Lesson 6: Dessert (To apply culinary skills and knowledge). Use KS2 Evaluation sheet at the end of the unit.	
Vocabulary	accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template	balance, bitter, bridge method, complement, cookbook, farm to fork, method, nationality, reared, research, pairing, preparation, salty, sour, storyboard, sweet, umami	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
Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		
Cross-Curricular Links	Maths: measuring accurately.	Science: Recognising the impact of diet on our bodies. RSE/PSHE: Considering different dishes from other cultures, developing awareness of healthy eating, following basic food hygiene.	Science (Animals, including humans): finding out about the needs of animals. Computing: Using search engines to research animals, programming and debugging an animal monitor, using CAD skills to create virtual models. Geography: Considering how we can use the six Rs of sustainability to develop more sustainable habits. History: Learning about how thermometers have developed, learning about the history behind plastic use. RSE/PSHE: Considering our shared responsibilities for protecting the environment.

LONG TERM OVERVIEW FOR DESIGN AND TECHNOLOGY

KEY: DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION

Year 6	Autumn Term	Spring Term	Summer Term
Topic	VICTORY IS OURS!	GREAT EXPECTATIONS	TROY STORY
Key Area	Electrical Systems	Structures	Mechanisms
Kapow Unit	Steady Hand Game	Bridges	Automata Toys
Focus	Design – Art Deco Inspired	Technical Skill & Knowledge	Design – Memphis Inspired
NC Objectives	- 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - 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 use electrical systems in their products [for example, series circuits	- 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 wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - 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.	- 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. - 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 how key events and individuals in design and technology have helped shape the world.

	incorporating switches, bulbs, buzzers and motors].	-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].
Intended Outcomes	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.	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.	Mark, saw and cut out the components and supports of their toy with a varying degree 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.
Sequencing	Lesson 1: Developing through play (To research and analyse a range of toys). Lesson 2: Art Deco design movement – not KAPOW planning (To explore the Art Deco design movement and explore existing products). Lesson 3: Game plan (To design a steady hand game). Incorporate the Art Deco design as a stimulus and influence. Lesson 4: Base building (To construct a stable base). Try to get children to not use the template and to create more complex creative bases. Lesson 5: Electronic assembly (To assemble and complete their electronic game).	Lesson 1: Arch and beam bridges (To explore how to reinforce a beam (structure) to improve its strength). Lesson 2: Spaghetti truss bridges (To build a spaghetti truss bridge). Lesson 3: Cutting joints – not KAPOW planning (To cut and create joints). Lesson 4: Building bridges (To build a truss bridge). This could be whole class or larger groups. Lesson 5: Finalising bridges (To complete, reinforce and evaluate my truss bridge). This could be whole class or larger groups. Use KS2 Evaluation sheet at the end of the unit.	Lesson 1: Memphis design movement – not KAPOW planning (To explore the Memphis design movement and explore existing products). Lesson 2: Automata (To design a design a criteria to meet a user's needs). This may need to be adapted so that the children incorporate the Memphis design movement within their design. Lesson 3: Frame assembly (To use an exploded diagram to assemble a frame). Lesson 4: Experimenting with CAMS (To explore a mechanism to inform a design decision). This may need to be adapted so that the children incorporate the Memphis design movement within their design.

	Use KS2 Evaluation sheet at the end of the unit.		Lesson 5: Finishing touches (To evaluate a completed design). Use KS2 Evaluation sheet at the end of the unit.
Vocabulary	assemble, battery, battery pack, benefit, bulb, bulb holder, buzzer, circuit, circuit symbol, component, conductor, copper, design, design criteria, evaluation, fine motor skills, fit for purpose, form, function, gross motor skills, insulator, LED, user	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	accurate, assembly-diagram, automata, axle, bench hook, cam, clamp, component, cutting list, diagram, dowel, drill bits, exploded-diagram, finish, follower, frame, function, hand drill, jelutong, linkage mark out, measure, mechanism, model, research, right-angle, set square, tenon saw
Health and Safety	SEE KAPOW D&T RISK ASSESSMENT		
Cross-Curricular Links	Maths: using net templates to create the base of their game. Science: drawing circuit diagrams, naming components and their functions. Art and design: exploring one line drawings. Computing: recapping rules for safe online searching.	Maths: Measuring wood accurately to the nearest mm, draw 45° angles. Science: Using investigative methods to test the strength of a range of bridges, considering properties of materials.	Maths: Measuring accurately to the nearest mm. History: Learning about Victorian toys.