



**THE BRAMBLE
ACADEMY**

Design and Technology at The Bramble Academy	
Substantive knowledge in Design and Technology:	Children at the Bramble Academy will have the opportunity to learn more about the world, the systems and processes which have evolved over time to solve a problem. Through their exploration and development of problem solving, they will learn about mechanisms, construction, cooking and nutrition, textiles and electrical systems. They will have the opportunity to find solutions to current problems, whilst embedding the disciplinary knowledge to become the future designers we need.
Disciplinary knowledge in Design and Technology:	All units at the Bramble Academy will use the 3 step cycle of designing, making and evaluating in every project. Further progression can be found on the Kapow website. DT Scheme of Work Progression of Skills & Knowledge
Vocabulary:	The teaching of vocabulary is crucial to academic success for our children. Tier 2 and 3 vocabulary is mapped out throughout our curriculum to ensure vocabulary is both progressive and ambitious.

Sequence of Knowledge

KS1 – Year 1

Autumn – Term 2 – 1 Week	Spring – Term 4 – 2 Weeks	Summer – Term 5 – 3 Days
Kapow: Constructing a windmill (Structures)	Kapow: Wheels and axles (Mechanism)	Kapow: Smoothies (Cooking and Nutrition)
<p>Pupils will be taught how:</p> <ul style="list-style-type: none"> To follow a design criteria to meet the needs of a user. To make a stable structure. To make functioning sails and blades that attach to the supporting structure, To improve their windmill. 	<p>Pupils will be taught:</p> <ul style="list-style-type: none"> To explain that wheels move because they are attached to an axle. To recognise that wheels and axles are used in everyday life, not just in cars. To identify and explain vehicle design flaws using the correct vocabulary. To design a vehicle that includes functioning wheels, axles and axle holders. To make a moving vehicle with working wheels and axles. To explain what must be changed if there are any operational issues. 	<ul style="list-style-type: none"> 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.
<p>Key concept: What is a structure?</p> <p>By exploring windmills, children will learn that structures are built for a reason. Children will learn that stable structures do not topple, they can be made more stable by adding weight id needed. Windmills have sails or blades, which are moved by the wind, they are used to generate power or to ground flour. *Children can review their learning in maths, through the properties of different shapes.</p> <p>Key ideas pupils will know and understand: Lesson 1: How do I make a structure stable ?</p> <ul style="list-style-type: none"> - To recall the properties of materials. - To find the centre of an object. - To puncture a hole. - To add weight to a structure. 	<p>Key concept: How do vehicles move?</p> <p>Children will have the opportunity to learn about axles, axle holders and wheels, linking to making a vehicle move. This unit will allow children to test mechanisms to identify what prevents the axle from moving. By the end of the unit, children will have designed a vehicle frame which is able to move and balance.</p> <p>Key ideas pupils will know and understand: Lessons 1 and 2 : How do wheels move?</p> <ul style="list-style-type: none"> - To identify what mechanism makes a toy or vehicle roll forwards. - To recall that in order for a wheel to move it must be attached to an axle. - To draw and label a diagram of an axle, wheel and axle holder. 	<p>Key concept: How to make a nutritious smoothie?</p> <p>Children will have the opportunity to learn about a range of fruits and vegetables, beginning with where the foods come from and what they taste like. They will have the opportunity to learn about different tastes, whilst respecting a range of opinions around their class. Children will learn how to be safe and how to justify their choices when designing a smoothie. Finally, children will have the opportunity to present their smoothie to a visitor and take on the feedback in the evaluation stage.</p> <p>Key ideas pupils will know and understand: Lesson 1 (combing Lesson 1 and 2 from Kapow): Where does our food come from?</p> <ul style="list-style-type: none"> - To name fruits and vegetables.



<p>Resources: Kapow</p> <p>Lesson 2: How can I use equipment accurately to make part of structure?</p> <ul style="list-style-type: none"> - To hold scissors correctly. - To begin to estimate equal distances. - To cut carefully. - To fold to make the shape of the structure. <p>Resources: Kapow</p> <p>Lesson 3: How can different parts be attached to a structure?</p> <ul style="list-style-type: none"> - To widen a hole. - To join parts together. - To attach a supporting structure. - To test a structure. <p>Resources: Kapow</p> <p>Lesson 4: How successful is my windmill?</p> <ul style="list-style-type: none"> - To test my windmill. - To make my design better. - To decorate my windmill for the user. <p>Resources: Kapow</p>	<p>Resources: Kapow</p> <p>Lesson 3: How can we fix a broken wheel?</p> <ul style="list-style-type: none"> - To recall that a wheel needs an axle in order to move. - To fix a design so that the wheel can move. - To use appropriate vocabulary to describe which parts are moving or not. <p>Resources: Kapow</p> <p>Lessons 4 and 5 : What will my moving vehicle be like?</p> <ul style="list-style-type: none"> - To recall what makes a wheel and an axle work. - To design a moving vehicle. - To label my design using appropriate vocabulary. <p>Resources: Kapow</p> <p>Lessons 6, 7 and 8 : Does my vehicle move?</p> <ul style="list-style-type: none"> - To make a wheel and axle mechanism. - To evaluate my design to make it even better. <p>Resources: Kapow</p>	<ul style="list-style-type: none"> - To identify seeds. identify what mechanism makes a toy or vehicle roll forwards. - To sort fruits and non-fruits. - To name places where fruits and vegetables grow. - To decide whether a fruit or vegetable will grow aboveground or underground. - To make predictions about where edible parts of plants will grow. <p>Resources: Kapow</p> <p>Lesson 2 (Combining lessons 3 and 4 on Kapow) : How can I make food safely to eat?</p> <ul style="list-style-type: none"> - To use a fork to hold foods I am cutting. - To use a table knife to cut soft foods. - To use a juicer to get juice from fruits. - To work safely and follow instructions. - To choose fruits and vegetables to taste. - To suggest fruits to put together based on taste. - To describe a food's taste. - To decide on three ingredients to create a recipe. <p>Resources: Kapow</p> <p>Lesson 3 (Combining lessons 5 and 6 on Kapow) : How can I make the most tastiest smoothie?</p> <ul style="list-style-type: none"> - To gather the ingredients for a simple recipe. - To cur and juice the fruit as part of a recipe. - To use sense to compare smoothies. - To create a carton design.
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		<ul style="list-style-type: none"> - To choose a favourite recipe and share my reasons. - To talk to the class about the design brief. <p>Resources: Kapow</p>
<p>Vocabulary: base, centre, design, equal, evaluate, middle, rotate, rotor, rotor blades, sails, same, stable, strong, structure, test, weak, wind, windmill</p>	<p>Vocabulary: axle, axle holder, chassis, diagram, dowel, equipment, mechanism, wheel</p>	<p>Vocabulary: blend, blender, chopping board, compare, cut, design, evaluate, flavour, fork, fruit, healthy, ingredients, juice, juicer, leaf, plant, recipe, root, seed, select, smoothie, stem, table knife, taste, tree, vegetable, vine</p>
<p>Prior Learning:</p>	<p>Prior Learning:</p>	<p>Prior Learning:</p>

Sequence of Knowledge

KS1 – Year 2

Autumn – Term 2 – 1 Week	Spring – Term 4 – 2 Weeks	Summer – Term 5 – 3 Days
Kapow: Pouches (Textiles)	Kapow: Fairground Wheel (Mechanism)	Kapow: Balanced Diets (Cooking and Nutrition)
<p>Pupils will be taught how:</p> <ul style="list-style-type: none"> To sew a running stitch with regular- sized stitches and understand that both ends must be knotted. To prepare and cut fabric to make a pouch from a template. To use a running stitch to join the two pieces of fabric together. To decorate their pouch using the materials provided. 	<p>Pupils will be taught:</p> <ul style="list-style-type: none"> To describe how axles help wheels move a vehicle and design and label a working fairground wheel. To evaluate different designs. To describe the properties of different materials and select appropriate materials for the wheel. To build a stable structure, test elements of the design and adapt the design as necessary. To make the wheel rotate, evaluate a wheel mechanism and adapt it as necessary. To recall that a survey is used to find out what people like, tally results and use the results to inform the design. To add pods for the correct number of people and ensure that the pods stay upright when rotating around a fixed point. To explain the decisions for the pod design. 	<ul style="list-style-type: none"> To name the main food groups and identify foods that belong to each group. To describe the taste, feel and smell of a given food. To think of three different wrap ideas, considering flavour combinations. To construct a wrap that meets the design brief and their plan.
<p>Key concept: How to make a pouch? Children will learn how to design a pouch, building on their understanding of design brief, to meet a need. Children will learn how to use a template to cut fabric, pinning layers together before using a running stitch to join fabric.</p> <p>Key ideas pupils will know and understand: Lesson 1: How can I join fabric ? - To thread a needle. - To sew a running stitch. - To use a neat and evenly spaced stitches to join fabric.</p>	<p>Key concept: How do fairground wheels move? Children will be building on their knowledge of wheels and axles to make a moving fairground wheel with enough pods to meet the design brief.</p> <p>Key ideas pupils will know and understand: Lessons 1 : How do fairground wheels move? - To describe how axles help wheels to move a vehicle. - To evaluate different designs, - To design and label a working wheel. Resources: Kapow</p> <p>Lesson 2: How to make a stable fairground wheel?</p>	<p>Key concept: How to make popular and nutritious wrap? Children will explore data from surveys to design a suitable wrap to meet the design brief. Children will learn about the five food groups and the benefits of each, this will be used to support the children’s evaluations and adaptations.</p> <p>Key ideas pupils will know and understand: Lesson 1: What are the different food groups? - To name the five food groups. - To match foods with the food group they belong to. - To be able to explain how much of each food group children should have every day.</p>



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<p>Resources: Kapow</p> <p>Lesson 2: How are templates used in textiles?</p> <ul style="list-style-type: none"> - To remember how to use a template. - To cut a fabric neatly. - To pin fabric accurately. - To design a pouch <p>Resources: Kapow</p> <p>Lesson 3: How can I make a pouch?</p> <ul style="list-style-type: none"> - To sew neat and even stitches, - To tie a knot at either end of the thread. - To design decorations for my product. <p>Resources: Kapow</p> <p>Lesson 4: How can I design my pouch to meet the design brief?</p> <ul style="list-style-type: none"> - To join items using fabric glue or stitching. - To decorate fabric using different items. - I can evaluate my own designs. <p>Resources: Kapow</p>	<ul style="list-style-type: none"> - To describe the properties of different materials. - To select appropriate materials for my wheel. - To build a wheel on an axle. <p>Resources: Kapow</p> <p>Lessons 3 and 4 : How will a fairground wheel be moving?</p> <ul style="list-style-type: none"> - To build a table structure. - To test elements of my design. - To adapt my design as necessary. - To make the wheel rotate. <p>Resources: Kapow</p> <p>Lessons 5 : Which fairground wheel will have the most customers?</p> <ul style="list-style-type: none"> - To recall that a survey is used to find out what people like. - To tally results. - To use my results to inform the design. <p>Resources: Kapow</p> <p>Lessons 6 : Does my fairground wheel meet the design brief?</p> <ul style="list-style-type: none"> - To recall that a survey is used to find out what people like. - To tally results. - To use my results to inform the design. <p>Resources: Kapow</p>	<p>Resources: Kapow</p> <p>Lesson 2 : What makes a balanced meal?</p> <ul style="list-style-type: none"> - To identify foods I like. - To explain the food groups in a meal. - To plan a balanced meal. <p>Resources: Kapow</p> <p>Lesson 3 : How can I prepare food safely?</p> <ul style="list-style-type: none"> - To identify equipment used for preparing food. - To practise food preparation skills using a range of equipment. - To justify using a piece of equipment with a type of food. <p>Resources: Kapow</p> <p>Lesson 4 : How can I balance combinations of ingredients?</p> <ul style="list-style-type: none"> - To select foods from specific food groups. - To describe the taste of different foods. - To explain why I have chosen to put foods together. <p>Resources: Kapow</p> <p>Lesson 5 : Which wrap combination will meet the design brief the best?</p> <ul style="list-style-type: none"> - To follow design criteria, - To design three different wraps. - To justify the choice I have made. <p>Resources: Kapow</p>
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		<p>Lesson 6 : Have I met the design brief?</p> <ul style="list-style-type: none"> - To select the ingredients for my recipe. - To identify the equipment needed to prepare different foods. - To decide if I like different wraps and choose my favourite. <p>Resources: Kapow</p>
<p>Vocabulary: decorate, fabric, fabric glue, knot, needle, needle, threader, running stitch, sew, template, thread</p>	<p>Vocabulary: design brief, design criteria, evaluate, frame, model, opinion, rotate, survey</p>	<p>Vocabulary: appearance, balanced, carbohydrates, chopping board, combination, cut, dairy, design, design brief, diet, evaluate, feel, fruit, grate, grater, ingredients, menu, oils, proteins, review, scissors, smell, snip, spread, spreads, table knife, taste, vegetables</p>
<p>Prior Learning: Children will have had the experience of threading and weaving thicker materials in EYFS and in Year 1.</p>	<p>Prior Learning: Children made moving fire engines in Year 1, learning about the axle and wheel mechanism.</p>	<p>Prior Learning:</p>

Sequence of Knowledge

KS2– Year 3

Autumn – Term 2 – 1 Week	Spring – Term 4 – 2 Weeks	Summer – Term 5 – 3 Days
<p style="text-align: center;">Constructing a planter (Structures) *Some elements of KAPOW have been used to support.</p>	<p style="text-align: center;">Kapow: (Electrical Systems)</p>	<p style="text-align: center;">Kapow: Cross-stitch and applique for Egyptian collars (Textiles)</p>
<p>Pupils will be taught how:</p> <ul style="list-style-type: none"> To design a planter to meet the design criteria. To make a planter using a range of 3D shapes. To cut along lines on the net of a 2D shape. To evaluate their work by asking simple questions. 	<p>Pupils will be taught:</p> <ul style="list-style-type: none"> . 	<p>Pupils will be taught:</p> <ul style="list-style-type: none"> To demonstrate their ability to use cross-stitch as a decorative feature or to join two pieces of fabric together. To develop appliqué designs based on design criteria. To design, cut and shape their template for an usekh or wesekh collar with increasing accuracy. To decorate their Egyptian collar using a variety of techniques, such as appliqué, cross-stitch, beads, buttons and pinking. To measure and attach a ribbon with a running stitch. To recognise different types and qualities of fabrics. To explain the aesthetic and functional properties of some of their material choices.
<p>Key concept: How can a planter be made stable? Children will learn how to use a range of shapes to make a stable structure to meet a need. Children will develop evaluative language to review their structure.</p> <p>Key ideas pupils will know and understand: Lesson 1: What is a planter and how is it made? - To review the planters on the school grounds to create a design brief. - To identify the similarities between all planters which make them successful designs. -To identify the 2D and 3D shapes used to make planters.</p> <p>Resources:</p>	<p>Key concept:</p> <p>Key ideas pupils will know and understand: Lessons 1 and 2 :? - To Resources: Kapow</p> <p>Lesson 3: ? - To - To Resources: Kapow</p> <p>Lessons 4 and 5 :? - To Resources: Kapow</p>	<p>Key concept: How can different stitches and techniques be used to assemble Egyptian collars? Children will develop their knowledge of running stitch to create cross-stitch designs to join and decorate fabrics.</p> <p>Key ideas pupils will know and understand: Lesson 1: What is cross-stitch and applique? - To recall running stitch. - To use the cross-stitch sewing technique. - To know how to applique. - To reflect on the techniques used.</p> <p>Resources: Kapow</p> <p>Lesson 2 : How can templates help create a design?</p>



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<p>Lesson 2: What will your planter include?</p> <ul style="list-style-type: none"> - To design the planter using 2D and 3D shapes. -To label the materials which would be the most suited for the task. -To justify the colours which will be used. <p>Resources:</p> <p>Lesson 3: How can 2D become 3D?</p> <ul style="list-style-type: none"> - To know what the bold and dotted lines signify on a 2D net. - To fold on the dotted lines accurately. - To keep the tabs on the correct size. - To make crisp folded edges. <p>Resources:</p> <p>Lesson 4: How do I know that my planter was stable?</p> <ul style="list-style-type: none"> - To ensure that the planter is stable. - To decorate the planter to meet the design brief. - To evaluate my work and the work of others. <p>Resources:</p>	<p>Lessons 6, 7 and 8 :?</p> <ul style="list-style-type: none"> - To - . <p>Resources: Kapow</p>	<ul style="list-style-type: none"> - To design a collar based on a set theme. - To develop a template. - To understand how to adapt a template to fit design criteria. <p>Resources: Kapow</p> <p>Lesson 3 : How can I embellish the collar (part 1)?</p> <ul style="list-style-type: none"> - To cut and shape fabric accurately. - To use template to create the main parts of the fabric product. - To use stitches to join fabrics. - To know that fabrics have different properties depending on the material. <p>Resources: Kapow</p> <p>Lesson 4 : How can I embellish the collar (part 2)?</p> <ul style="list-style-type: none"> - To follow a design criteria. - To use cross-stitch. - To be able to add applique. <p>Resources: Kapow</p>
<p>Vocabulary:</p> <p>2D,3D,castle,design,key features, net, scoring, shape, stable, stiff, strong, structure, tab</p>	<p>Vocabulary:</p>	<p>Vocabulary:</p> <p>asymmetrical, appliqué, cotton, cross-stitch, embellish, fabric, patch , pinking, polyester, running stitch, silk, symmetrical, template, thread, unique</p>
<p>Prior Learning:</p>	<p>Prior Learning:</p>	<p>Prior Learning:</p>

Sequence of Knowledge

KS2– Year 4

Autumn – Term 2 – 1 Week	Spring – Term 4 – 2 Weeks	Summer – Term 5 – 3 Days
Kapow: Making a slingshot car (Mechanism)	Kapow: Adapting a recipe (Cooking and Nutrition)	Kapow: Pavilion (Structures)
<p>Pupils will be taught how:</p> <ul style="list-style-type: none"> To work independently to produce an accurate, functioning car chassis. To design a shape that is suitable for the project. To attempt to reduce air resistance through the design of the shape. To produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed. To construct car bodies effectively. To conduct a trial accurately and draw conclusions and improvements from the results. 	<p>Pupils will be taught how to:</p> <ul style="list-style-type: none"> 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. 	<p>Pupils will be taught how to:</p> <ul style="list-style-type: none"> produce a range of free-standing frame structures of different shapes and sizes. design a pavilion that is strong, stable and aesthetically pleasing. select appropriate materials and construction techniques to create a stable, free-standing frame structure. select appropriate materials and techniques to add cladding to their pavilion.
<p>Key concept: How can I make the fastest car? Children will consider how their car's shape will reduce air resistance in order to increase speed. Children will use their measuring and making skills to ensure that their car is made accurately.</p> <p>Key ideas pupils will know and understand: Lesson 1: How to make a car chassis? - To understand that car designs have developed over many years - To know that a chassis is the frame of a car on which everything else is built. - To know that all moving things have kinetic energy. - To know that kinetic energy is the energy that something (an object or person) has by being in motion,</p>	<p>Key concept: What makes a good biscuit? Children will consider the target audience for their biscuit, taking into account the budget and market research before beginning to design. Children will evaluate their product against the design brief, making suggestions for any future products.</p> <p>Key ideas pupils will know and understand: Lesson 1 : What makes a good biscuit? - To describe different types of biscuits and their packaging. - To identify the taste and texture of existing biscuits. - To explain how I know a biscuit is made for a certain target audience.</p> <p>Resources: Kapow</p>	<p>Key concept: How can design meet purpose? Children will build on previous work on structures in order to make a pavilion which is stable, and aesthetically pleasing.</p> <p>Key ideas pupils will know and understand: Lesson 1 : Are all frames the same? - To make a variety of different frame structures. - To know what a pavilion is used for.</p> <p>Resources: Kapow</p> <p>Lesson 2: How can pavilions be stable? - To understand that different materials can create different effects.</p>



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e.g., the energy that a swing has to keep moving; any object in motion uses kinetic energy.

Resources: Kapow

Lesson 2: How can I make my car go quicker?

I can design a suitable car body to cover my chassis by:

- Drawing a net to create a structure from.
- Choosing shapes that increase or decrease the speed of the car as a result of air resistance.
- Adding graphics to personalise my design.

Resources: Kapow

Lesson 3: How can I make a model which matches my design?

I can make the body of my car by:

- Remembering that nets are flat shapes that can be turned into 3D structures.
- Measuring, marking and cutting the panels (nets) against the dimensions of my chassis.
- Including tabs on my net so I can secure them to the panels of my chassis
- Decorating the panels.

Resources: Kapow

Lessons 4 and 5: How can I assemble and test my completed product?

To assemble the panels of the body to the chassis correctly.

To remember that smaller shapes create less air resistance and can move faster through the air.

Lesson 2 and 3: How can I be safe and hygienic when making my biscuit?

- To follow simple food safety and hygiene rules.
- To follow a recipe and use a cooking technique.
- To discuss how a recipe can be changed.

Resources: Kapow

Lesson 4: How can I ensure that my biscuit is affordable to make?

- To select ingredients for a target audience.
- To calculate the cost of extra ingredients.
- To create a design for the final product.

Resources: Kapow

Lesson 5: What is already on the market?

- To describe the packaging of different biscuits.
- To create a design for a biscuit box.
- To fold and construct a cuboid template.

Resources: Kapow

Lesson 6: How can I improve my biscuit?

- To follow a recipe.
- To modify the recipe using my design ideas and budget.
- To collect feedback from a member of my target audience.

Resources: Kapow

Lesson 7: How did I do?

- To create criteria for evaluation.
- To present my design for evaluation.
- To evaluate the designs of others using criteria.

- To understand how to make a stable structure.
- To design a structure that is stable and aesthetically pleasing.

Resources: Kapow

Lesson 3: How can I make a stable frame?

- To build a free-standing structure.
- To select appropriate materials to build a strong structure.
- To use my knowledge of how to reinforce corners to strengthen my structure.
- To refer to my design to create a pavilion.

Resources: Kapow

Lesson 4: How can I add textural effects to my pavilion?

- To select appropriate materials for my cladding.
- To add cladding which reflects my design.
- To create different textural effects with my chosen material.

Resources: Kapow



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<p>To evaluate the speed of my design based on the understanding that some cars are faster than others as a result of the following:</p> <ul style="list-style-type: none"> -Body shape -Stored energy in the elastic band. - Accuracy of the angle in the chassis and axle.` <p>Resources: Kapow</p>	<p>Resources: Kapow</p>	
<p>Vocabulary: chassis, energy, kinetic, mechanism, air resistance, design, structure, graphics, research, model, template</p>	<p>Vocabulary: adapt, addition, appearance, budget, butterfly, combine, comment, compare, construct, cream, crunchy, cuboid, cut, design, evaluate, fold, hygiene, ingredients, layout, market, research, modify, multiplication, opinion, pounds, sieve, sift, target audience, taste, texture, unique, wooden spoon</p>	<p>Vocabulary: 3D shapes, cladding, design criteria, innovative, natural, reinforce, structure</p>
<p>Prior Learning:</p>	<p>Prior Learning:</p>	<p>Prior Learning:</p>

Sequence of Knowledge

KS2– Year 5

Autumn – Term 2 – 1 Week	Spring – Term 4 – 2 Weeks	Summer – Term 5 – 3 Days
Kapow: Bridges (Structures)	Kapow: Stuffed Toys (Textiles)	Kapow: Doodlers (Electrical Systems)
<p>Pupils will be taught how to:</p> <ul style="list-style-type: none"> • 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. 	<p>Pupils will be taught how to:</p> <ul style="list-style-type: none"> • 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. 	<p>Pupils will be taught how to:</p> <ul style="list-style-type: none"> • Identify simple circuit components (battery, bulb and switch) with a basic explanation of their function. • Explain that a series circuit is assembled in a loop to allow the electricity to flow along one path. • Describe a motor as a circuit component that changes electrical energy into movement. • Provide examples of motorised products that use movement to rotate or spin different parts. • Remove and replace different parts of a Doodler, as part of a team. • Suggest ways to switch the configuration to amend the form or function of the Doodler. • Explain, in an investigation report, each of the changes they made and the effect this had on the Doodler’s ability to draw scribbles (function) and appearance (form). • Develop design criteria with consideration for the target user, the purpose of their Doodler, a key function and the Doodler’s form and final appearance (e.g. fun, bright, soft). • Explain simply why their Doodler has a certain configuration based on the findings of their investigation (e.g. I used four pens because the Doodler would fall over with two). • Create a functional Doodler that creates scribbles on paper with or without a switch. • Identify and list each of the required materials, tools and circuit components required to build a Doodler. • Explain simply the steps to assemble a Doodler as part of a set of instructions (or storyboard).

		<ul style="list-style-type: none"> • Write instructions to build a functional circuit, explaining how to identify if it is functional or not. • Provide suggestions to improve a peer's set of instructions after testing how effective they are at guiding someone.
<p>Key concept: How is a bridge made? Children will learn how bridges are made stable with a focus on triangulation and reinforced corners to support. Children will consider the properties of materials, being able to explain why they have made choices in their design.</p> <p>Key ideas pupils will know and understand: Lesson 1: How are bridges reinforced ? - To identify beam and arch bridges. - To create a range of beam and arch bridge designs. - To identify stronger and weaker structures. - To find different ways to reinforce structures. Resources: Kapow</p> <p>Lesson 2: Are all bridges the same? - To identify arch, beam and truss bridges. -To use triangles to create truss bridges and test them. -To understand how triangles can be used to reinforce bridges. Resources: Kapow</p> <p>Lesson 3: What is important when making a bridge? -To measure and mark out accurately on wood. -To select appropriate tools and equipment for particular tasks.</p>	<p>Key concept: What makes a good stuffed toy? Children will create and use templates to make their stuffed toys. Building on previous work on textiles, children will learn how to use the blanket-stitch to reinforce edges.</p> <p>Key ideas pupils will know and understand: Lesson 1: What do I want my stuffed toy to be like? - To ensure that my template is proportional. - To make a paper template. Resources: Kapow</p> <p>Lessons 2 and 3 (based on lesson 2 on Kapow): How can edges be reinforced? - To cut out neatly and accurately. - To thread a needle. - To use blanket stitch to join two pieces of fabric. Resources: Kapow</p> <p>Lessons 4 and 5 (based on lesson 3 on Kapow) : How can I add decorations to my fabric? - To create strong and secure stitches. - To use applique to attach pieces of fabric decoration. - To use stitches to decorate fabric. Resources: Kapow</p>	<p>Key concept: How to make a Doodler? Exploring series circuits and introducing motors by investigating an existing motorised product, this unit encourages the pupils to problem-solve and understand a product's construction before developing their own.</p> <p>Key ideas pupils will know and understand: Lesson 1: How are motors used in electrical products? - To identify simple circuit components. - To explain what a series circuit is. - To give examples of motorised products and explain their primary function. Resources: Kapow</p> <p>Lesson 2: What effects the product's form and function? - To take apart a product and reassemble it. - To determine which parts of the product affect its function. - To determine which parts of the product affect its form. - To alter the way a product functions by tinkering with its configuration. Resources: Kapow</p>



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<p>-To follow health and safety rules. -To explain why selecting appropriating materials is an important part of the design process. Resources: Kapow</p> <p>Lesson 4: How successful is my bridge? -To complete my wooden truss bridge. -To identify points of weakness and reinforce them as necessary following testing. -To evaluate my truss bridge against a specification. Resources: Kapow</p>	<p>Lessons 6, and 7 (based on lesson 4 on Kapow) : Does my stuffed toy meet the design brief?</p> <ul style="list-style-type: none"> - To use blanket stitch to join two pieces of fabric. - To stuff my toy carefully, repairing any holes or gaps. - To evaluate my stuffed toy. <p>Resources: Kapow</p>	<p>Lesson 3: How will my product be unique?</p> <ul style="list-style-type: none"> - To identify design criteria based on findings from an investigation. - To develop my design based on key points discovered in an investigation. - To incorporate a motor into an electrical system. <p>Resources: Kapow</p> <p>Lesson 4: How to make a Doodler?</p> <ul style="list-style-type: none"> - To identify and list the materials, equipment and circuit components required to build my products. - To explain the steps required to assemble my product. - To explain how to build and integrate an electrical system as part of my product. <p>Resources: Kapow</p>
<p>Vocabulary: accuracy, aesthetics, arch bridge, assemble, beam bridge, bench hook/vice, corrugation, evaluate, factors, hardwood, joints, lamination, mark out, material, properties, quality of finish, reinforce, rigid, sandpaper/glasspaper, softwood, stability, stiffness, strength, technique, tenon saw/coping saw, truss bridge, visual appeal, wood file/rasp, wood sourcing</p>	<p>Vocabulary: accurate, annotate, appendage, blanket-stitch, design criteria, detail, evaluation, fabric, sew, shape, stuffed toy, stuffing, template</p>	<p>Vocabulary: circuit component, configuration, current, develop, DIY, investigate, motor, motorised, problem solve, product, analysis, series circuit, stable, target user</p>
<p>Prior Learning:</p>	<p>Prior Learning:</p>	<p>Prior Learning:</p>

Sequence of Knowledge

KS2– Year 6

Autumn – Term 2 – 1 Week	Spring – Term 4 – 2 Weeks	Summer – Term 5 – 3 Days
Kapow: Steady Hand Game (Electrical Structures)	Kapow: Automata toys (Mechanism)	Kapow: Come dine with me (Cooking and Nutrition)
<p>Pupils will be taught how to:</p> <ul style="list-style-type: none"> • 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 	<p>Pupils will be taught:</p> <ul style="list-style-type: none"> • . 	<ul style="list-style-type: none"> •
<p>Key concept: How steady is your hand? Understand what is meant by fit for purpose design and form follows function. Design and develop a steady hand game using a series circuit, including housing and backboard.</p>	<p>Key concept: What catches your eye? Developing a functional automata window display, this unit offers clearer video instruction, opportunities to interpret exploded diagrams and additional time to explore different cam shapes and make design choices that impact the final product.</p>	<p>Key concept: What makes a winning menu? Developing a three-course menu focused on three key ingredients as part of a paired challenge to develop the best class recipes.</p> <p>Key ideas pupils will know and understand:</p>



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Key ideas pupils will know and understand:

Lesson 1: What makes a good toy ?

- To research images and information about existing children's toys.
- To analyse a selection of existing children's toys.
- To apply my knowledge of form and function.

Resources: Kapow

Lesson 2: What makes a good toy (design)?

- To identify and name the components in a steady hand game.
- To decide on clear design criteria for my game.
- To design a game and draw it from three different perspectives.
- To create a design that reflects the design criteria.

Resources: Kapow

Lesson 3: How can I ensure a high-quality finish?

- To accurately cut and assemble a net.
- To decorate the base and ensure a high-quality finish.
- To ensure that the sides of the base are aligned when glued.
- To use tabs to secure the pieces of the net in place.

Resources: Kapow

Lesson 4: How successful is my game?

- To make an test a circuit.
- To incorporate a circuit into a base.
- To name electrical components.

Resources: Kapow

Key ideas pupils will know and understand:

Lessons 1 and 2 : How do wheels move?

- To Resources: Kapow

Lesson 3: How can we fix a broken wheel?

- To
- To

Resources: Kapow

Lessons 4 and 5 : What will my moving vehicle be like?

- To

Resources: Kapow

Lessons 6, 7 and 8 : Does my vehicle move?

- To
- .

Resources: Kapow

Lesson 1 (combing Lesson 1 and 2 from Kapow): Where does our food come from?

- To
- To

Resources: Kapow

Lesson 2 (Combing lessons 3 and 4 on Kapow) : How can I make food safely to eat?

- To u
- .

Resources: Kapow

Lesson 3 (Combing lessons 5 and 6 on Kapow) : How can I make the most tastiest smoothie?

- To Resources: Kapow



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<p>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</p>	<p>Vocabulary:</p>	<p>Vocabulary:</p>
<p>Prior Learning:</p>	<p>Prior Learning:</p>	<p>Prior Learning:</p>