

## Design and Technology Curriculum

### Year A - YEAR 1/2

	Autumn	Spring	Summer
DT focus	Structures	Textiles	Cooking and Nutrition
<b>Key Skills and Techniques</b>	<p>Learning the importance of a clear design criteria. Including individual preferences and requirements in a design.</p> <p>Making stable structures from card, tape and glue.</p> <p>Learning how to turn 2D nets into 3D structures.</p> <p>Following instructions to cut and assemble the supporting structure of a windmill.</p> <p>Making functioning turbines and axles which are assembled into a main supporting structure.</p>	<p>Designing a pouch.</p> <p>Selecting and cutting fabrics for sewing.</p> <p>Decorating a pouch using fabric glue or running stitch.</p> <p>Threading a needle.</p> <p>Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.</p> <p>Neatly pinning and cutting fabric using a template.</p> <p>Troubleshooting scenarios posed by teacher.</p> <p>Evaluating the quality of the stitching on others' work.</p> <p>Discussing as a class, the success of their stitching against the success criteria.</p> <p>Identifying aspects of their peers' work that they particularly like and why.</p>	<p>Designing a healthy wrap based on a food combination which works well together.</p> <p>Slicing food safely using the bridge or claw grip.</p> <p>Constructing a wrap that meets a design brief.</p> <p>Describing the taste, texture and smell of fruit and vegetables.</p> <p>Taste testing food combinations and final products.</p> <p>Describing the information that should be included on a label.</p> <p>Evaluating which grip was most effective.</p>
<b>Key Knowledge</b>	<p>To understand that the shape of materials can be changed to improve the strength and stiffness of structures.</p> <p>To understand that cylinders are a strong type of structure (and, therefore, they are the main shape used for windmills and lighthouses).</p> <p>To understand that axles are used in structures and mechanisms to make parts turn in a circle.</p> <p>To begin to understand that different structures are used for different purposes.</p> <p>To know that a structure is something that has been made and put together.</p>	<p>To know that sewing is a method of joining fabric.</p> <p>To know that different stitches can be used when sewing.</p> <p>To understand the importance of tying a knot after sewing the final stitch.</p> <p>To know that a thimble can be used to protect my fingers when sewing.</p>	<p>To know that 'diet' means the food and drink that a person or animal usually eats.</p> <p>To understand what makes a balanced diet.</p> <p>To know where to find the nutritional information on packaging.</p> <p>To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.</p> <p>To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.</p> <p>To know that nutrients are substances in food that all living things need to make energy, grow and develop.</p> <p>To know that 'ingredients' means the items in a mixture or recipe.</p> <p>To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy.</p> <p>To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'.</p>
<b>Tasks</b>	KAPOW: Constructing a Windmill (Year 1)	KAPOW: Pouches (Year 2)	KAPOW: A Balanced Diet (Year 2)
<b>Vocabulary</b>	axle bridge design design criteria model net packaging structure template unstable stable strong weak	decorate fabric fabric glue knot needle needle threader running stitch sew template thread	balanced diet balance carbohydrate dairy fruit ingredients oils sugar protein vegetable design criteria

<b>Outcomes: Knowledge and Assessment</b>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Identify some features that would appeal to the client (a mouse) and create a suitable design.</li> <li>Explain how their design appeals to the mouse.</li> <li>Make stable structures, which will eventually support the turbine, out of card, tape and glue.</li> <li>Make functioning turbines and axles that are assembled into the main supporting structure.</li> <li>Say what is good about their windmill and what they could do better.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Sew a running stitch with regular-sized stitches and understand that both ends must be knotted.</li> <li>Prepare and cut fabric to make a pouch from a template.</li> <li>Use a running stitch to join the two pieces of fabric together.</li> <li>Decorate their pouch using the materials provided.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Name the main food groups and identify foods that belong to each group.</li> <li>Describe the taste, texture and smell of a given food.</li> <li>Think of four different wrap ideas, considering flavour combinations.</li> <li>Construct a wrap that meets the design brief and their plan.</li> </ul>
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## Year B YEAR 1/2

	Autumn	Spring	Summer
DT Focus	Structures	Mechanisms	Textiles
<b>Key Skills and Techniques</b>	Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects. Making a structure according to design criteria. Creating joints and structures from paper/card and tape. Building a strong and stiff structure by folding paper. Exploring the features of structures. Comparing the stability of different shapes. Testing the strength of their own structures. Identifying the weakest part of a structure. Evaluating the strength, stiffness and stability of their own structure.	Creating a design criteria for a moving monster as a class. Designing a moving monster for a specific audience in accordance with a design criteria. Making linkages using card for levers and split pins for pivots. Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. Cutting and assembling components neatly. Evaluating own designs against design criteria. Using peer feedback to modify a final design.	Using a template to create a design for a puppet. Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing steps for construction. Reflecting on a finished product, explaining likes and dislikes.
<b>Key Knowledge</b>	To know that shapes and structures with wide, flat bases or legs are the most stable. To understand that the shape of a structure affects its strength. To know that materials can be manipulated to improve strength and stiffness. To know that a structure is something which has been formed or made from parts. To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. To know that a 'strong' structure is one which does not break easily. To know that a 'stiff' structure or material is one which does not bend easily.	To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. To know that there is always an input and an output in a mechanism. To know that an input is the energy that is used to start something working. To know that an output is the movement that happens as a result of the input. To know that a lever is something that turns on a pivot. To know that a linkage mechanism is made up of a series of levers.	To know that 'joining technique' means connecting two pieces of material together. To know that there are various temporary methods of joining fabric by using staples, glue or pins. To understand that different techniques for joining materials can be used for different purposes. To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. To know that drawing a design idea is useful to see how an idea will look.
<b>Suggested tasks</b>	KAPOW: Build Baby Bear's Chair (Year 2)	KAPOW: Make a Moving Monster (Year 2)	KAPOW: Puppets (Year 1)
<b>Vocabulary</b>	design criteria man-made	axle design criteria	decorate design

	natural properties structure stable shape model test	input linkage mechanical output pivot wheel	fabric glue model hand puppet safety pin staple stencil template
<b>Outcomes: Knowledge and Assessment</b>	<p>Pupils who are <b>secure</b> will be able to:</p> <ul style="list-style-type: none"> <li>Identify man-made and natural structures.</li> <li>Identify stable and unstable structural shapes.</li> <li>Contribute to discussions.</li> <li>Identify features that make a chair stable.</li> <li>Work independently to make a stable structure, following a demonstration.</li> <li>Explain how their ideas would be suitable for Baby Bear.</li> <li>Produce a model that supports a teddy, using the appropriate materials and construction techniques.</li> <li>Explain how they made their model strong, stiff and stable.</li> </ul>	<p>Pupils who are <b>secure</b> will be able to:</p> <ul style="list-style-type: none"> <li>Identify the correct terms for levers, linkages and pivots.</li> <li>Analyse popular toys with the correct terminology.</li> <li>Create functional linkages that produce the desired input and output motions.</li> <li>Design monsters suitable for children, which satisfy most of the design criteria.</li> <li>Evaluate their two designs against the design criteria, using this information and the feedback of their peers to choose their best design.</li> <li>Select and assemble materials to create their planned monster features.</li> <li>Assemble the monster to their linkages without affecting their functionality.</li> </ul>	<p>Pupils who are <b>secure</b> will be able to:</p> <ul style="list-style-type: none"> <li>Join fabrics together using pins, staples or glue.</li> <li>Design a puppet and use a template.</li> <li>Join their two puppets' faces together as one.</li> <li>Decorate a puppet to match their design.</li> </ul>

## Year A - YEAR 3/4

	Autumn	Spring	Summer
DT focus	<b>Structures</b>	<b>Cooking and Nutrition</b>	<b>Textiles</b>
<b>Key Skills and Techniques</b>	<p>Designing a castle with key features to appeal to a specific person/purpose.</p> <p>Drawing and labelling a castle design using 2D shapes.</p> <p>Designing and/or decorating a castle tower on CAD software.</p> <p>Constructing a range of 3D geometric shapes using nets.</p> <p>Creating special features for individual designs.</p> <p>Making facades from a range of recycled materials.</p> <p>Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.</p> <p>Suggesting points for modification of the individual designs.</p>	<p>Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.</p> <p>Knowing how to prepare themselves and a workspace to cook safely in, learning the basic rules to avoid food contamination.</p> <p>Following the instructions within a recipe.</p> <p>Establishing and using design criteria to help test and review dishes.</p> <p>Describing the benefits of seasonal fruits and vegetables and the impact on the environment.</p> <p>Suggesting points for improvement when making a seasonal tart.</p>	<p>Writing design criteria for a product, articulating decisions made.</p> <p>Designing a personalised book sleeve.</p> <p>Making and testing a paper template with accuracy and in keeping with the design criteria.</p> <p>Measuring, marking and cutting fabric using a paper template.</p> <p>Selecting a stitch style to join fabric.</p> <p>Sewing neatly using small regular stitches.</p> <p>Incorporating a fastening to a design.</p> <p>Testing and evaluating an end product against the original design criteria.</p>
<b>Key Knowledge</b>	<p>To understand that wide and flat based objects are more stable.</p> <p>To understand the importance of strength and stiffness in structures.</p> <p>To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse – and their purpose.</p> <p>To know that a façade is the front of a structure.</p>	<p>To know that not all fruits and vegetables can be grown in the UK.</p> <p>To know that climate affects food growth.</p> <p>To know that vegetables and fruit grow in certain seasons.</p> <p>To know that cooking instructions are known as a 'recipe'.</p> <p>To know that imported food is food that has been brought into the country.</p>	<p>To know that a fastening is something that holds two pieces of material together.</p> <p>To know that different fastening types are useful for different purposes.</p> <p>To know that creating a mock-up (prototype) of their design is useful for checking ideas and proportions.</p>

	To understand that a castle needed to be strong and stable to withstand enemy attack.		
<b>Suggested tasks</b>	KAPOW: Constructing a Castle (Year 3)	KAPOW: Eating Seasonally (Year 3)	KAPOW: Fastenings (Year 4)
<b>Vocabulary</b>	2D 3D castle design key features net scoring shape stable stiff strong structure tab	climate diet imported ingredients natural processed reared recipe seasonal seasons sugar	Criteria Fabric Fastening Fix Mock-up Stitch Template
<b>Outcomes: Knowledge and Assessment</b>	<p>Pupils who are <b>secure</b> will be able to:</p> <ul style="list-style-type: none"> <li>• Draw and label a simple castle that includes the most common features.</li> <li>• Recognise that a castle is made up of multiple 3D shapes.</li> <li>• Design a castle with key features which satisfy a given purpose.</li> <li>• Score or cut along lines on the net of a 2D shape.</li> <li>• Use glue to securely assemble geometric shapes.</li> <li>• Utilise skills to build a complex structure from simple geometric shapes.</li> <li>• Evaluate their work by answering simple questions.</li> </ul>	<p>Pupils who are <b>secure</b> will be able to:</p> <ul style="list-style-type: none"> <li>• Explain that fruits and vegetables grow in different countries based on their climates.</li> <li>• Understand that 'seasonal' fruits and vegetables are those that grow in a given season and taste best then.</li> <li>• Know that eating seasonal fruit and vegetables has a positive effect on the environment.</li> <li>• Design their own tart recipe using seasonal ingredients.</li> <li>• Understand the basic rules of food hygiene and safety.</li> <li>• Follow the instructions within a recipe.</li> </ul>	<p>Pupils who are <b>secure</b> will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the features, benefits and disadvantages of a range of fastening types.</li> <li>• Write design criteria and design a sleeve that satisfies the criteria.</li> <li>• Make a template for their book sleeve.</li> <li>• Assemble their case using any stitch they are comfortable with.</li> </ul>

Year B - YEAR 3/4

	Autumn	Spring	Summer
DT focus	<b>Digital World</b>	<b>Electrical Systems</b>	<b>Mechanical Systems</b>
<b>Key Skills and Techniques</b>	<p>Problem solving by suggesting potential features on a Micro:bit and justifying my ideas.</p> <p>Developing design ideas for a technology pouch.</p> <p>Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.</p> <p>Using a template when cutting and assembling the pouch.</p> <p>Following a list of design requirements.</p> <p>Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch.</p> <p>Applying functional features such as using foam to create soft buttons.</p> <p>Analysing and evaluating an existing product. Identifying the key features of a pouch.</p>	<p>Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.</p> <p>Making a torch with a working electrical circuit and switch.</p> <p>Using appropriate equipment to cut and attach materials.</p> <p>Assembling a torch according to the design and success criteria.</p> <p>Evaluating electrical products.</p> <p>Testing and evaluating the success of a final product.</p>	<p>Designing a shape that reduces air resistance.</p> <p>Drawing a net to create a structure from.</p> <p>Choosing shapes that increase or decrease speed as a result of air resistance.</p> <p>Personalising a design.</p> <p>Measuring, marking, cutting and assembling with increasing accuracy.</p> <p>Making a model based on a chosen design.</p> <p>Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.</p>
<b>Key Knowledge</b>	<p>To understand that in programming a 'loop' is code that repeats something again and again until stopped.</p> <p>To know that a Micro:bit is a pocket-sized, codeable computer.</p> <p>Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.</p>	<p>To understand that electrical conductors are materials which electricity can pass through.</p> <p>To understand that electrical insulators are materials which electricity cannot pass through.</p> <p>To know that a battery contains stored electricity that can be used to power products.</p> <p>To know that an electrical circuit must be complete for electricity to flow.</p> <p>To know that a switch can be used to complete and break an electrical circuit.</p>	<p>To understand that all moving things have kinetic energy.</p> <p>To understand that kinetic energy is the energy that something (object/person) has by being in motion.</p> <p>To know that air resistance is the level of drag on an object as it is forced through the air.</p> <p>To understand that the shape of a moving object will affect how it moves due to air resistance.</p>
<b>Suggested tasks</b>	KAPOW: Electronic Charms (Year 3)	KAPOW: Torches (Year 4)	KAPOW: Make a Slingshot Car (Year 4)
<b>Vocabulary</b>	smart wearables product design digital revolution technology analogue digital feature function digital world Micro:bit electronic products program loops initiate simulator control monitor sense template develop	battery bulb buzzer conductor circuit circuit diagram electricity insulator series circuit switch component design design criteria diagram evaluation LED model shape target audience input	chassis energy kinetic mechanism air resistance design structure graphics research model template

	fasten test user CAD (computer-aided design) point of sale display badge stand net design requirements layers	recyclable theme aesthetics assemble equipment ingredients packaging properties sketch test	
<b>Outcomes:  Knowledge and  Assessment</b>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>• Give a brief explanation of the digital revolution and/or remember key examples.</li> <li>• Suggest a feature from the Micro:bit that is suitable for an eCharm.</li> <li>• Write a program that initiates a flashing LED panel, or another pattern, on the Micro:bit when a button is pressed.</li> <li>• Identify errors, if testing is unsuccessful, by comparing their code to a correct example.</li> <li>• Explain the basic functionality of their finished program.</li> <li>• Suggest key features for a pouch, with some consideration for the overall theme and the user.</li> <li>• Use a template when cutting and assembling a pouch, with some support.</li> <li>• Describe what is meant by 'point of sale display' with an example.</li> <li>• Follow basic design requirements using computer-aided design, drawing at least one shape with a text box and bright colours, following a demonstration.</li> <li>• Evaluate their design.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>• Identify electrical products and explain why they are useful.</li> <li>• Help to make a working switch.</li> <li>• Identify the features of a torch and how it works.</li> <li>• Describe what makes a torch successful.</li> <li>• Create suitable designs that fit the success criteria and their own design criteria.</li> <li>• Create a functioning torch with a switch according to their design criteria.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>• Work independently to produce an accurate, functioning car chassis.</li> <li>• Design a shape that is suitable for the project.</li> <li>• Attempt to reduce air resistance through the design of the shape.</li> <li>• Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed.</li> <li>• Construct car bodies effectively.</li> <li>• Conduct a trial accurately and draw conclusions and improvements from the results.</li> </ul>

Year A - YEAR 5/6

	Autumn	Spring	Summer
DT focus	<b>Cooking and Nutrition</b>	<b>Textiles</b>	<b>Digital World</b>
<b>Key Skills and Techniques</b>	<p>Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.</p> <p>Writing an amended method for a recipe to incorporate the relevant changes to ingredients.</p> <p>Designing appealing packaging to reflect a recipe.</p> <p>Cutting and preparing recipes safely.</p> <p>Using equipment safely, including knives, hot pans and hobs.</p> <p>Knowing how to avoid cross-contamination.</p> <p>Following a step-by-step method carefully to make a recipe.</p> <p>Identifying the nutritional differences between different products and recipes.</p> <p>Identifying and describing healthy benefits of food groups.</p>	<p>Designing a waistcoat in accordance with a specification and design criteria to fit a specific theme.</p> <p>Annotating designs.</p> <p>Using a template when pinning panels onto fabric.</p> <p>Marking and cutting fabric accurately, in accordance with a design.</p> <p>Sewing a strong running stitch, making small, neat stitches and following the edge.</p> <p>Tying strong knots.</p> <p>Decorating a waistcoat – attaching objects using thread and adding a secure fastening.</p> <p>Learning different decorative stitches.</p> <p>Sewing accurately with even regularity of stitches. Evaluating work continually as it is created.</p>	<p>Writing a design brief from information submitted by a client.</p> <p>Developing design criteria to fulfil the client’s request.</p> <p>Developing a product idea through annotated sketches.</p> <p>Placing and manoeuvring 3D objects, using CAD.</p> <p>Changing the properties of, or combine one or more 3D objects, using CAD.</p> <p>Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).</p> <p>Explaining material choices and why they were chosen as part of a product concept.</p> <p>Programming an N,E, S,W cardinal compass.</p> <p>Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.</p> <p>Developing an awareness of sustainable design.</p> <p>Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch.</p> <p>Demonstrating a functional program as part of a product concept.</p>
<b>Key Knowledge</b>	<p>To understand where meat comes from – learning that beef is from cattle and how beef is reared and processed, including key welfare issues.</p> <p>To know that I can adapt a recipe to make it healthier by substituting ingredients.</p> <p>To know that I can use a nutritional calculator to see how healthy a food option is.</p> <p>To understand that ‘cross-contamination’ means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.</p>	<p>To understand that it is important to design clothing with the client/target customer in mind.</p> <p>To know that using a template (or clothing pattern) helps to accurately mark out a design on fabric.</p> <p>To understand the importance of consistently sized stitches.</p>	<p>To know that accelerometers can detect movement.</p> <p>To understand that sensors can be useful in products as they mean the product can function without human input.</p> <p>To know that designers write design briefs and develop design criteria to enable them to fulfil a client’s request.</p> <p>To know that ‘multifunctional’ means an object or product has more than one function.</p> <p>To know that magnetometers are devices that measure the Earth’s magnetic field to determine which direction you are facing.</p>
<b>Suggested tasks</b>	KAPOW: What could be healthier? (Year 5)	KAPOW: Waistcoats (Year 6)	KAPOW: Navigating the World (Year 6)
<b>Vocabulary</b>	beef reared processed ethical diet ingredients supermarket farm balanced	annotate decorate design criteria fabric target customer waistcoat waterproof	smart smartphone equipment navigation cardinal compass application (apps) pedometer GPS tracker design brief design criteria client function program duplicate replica

			loop variable value if statement boolean corrode mouldable lightweight sustainable design environmentally friendly biodegradable recyclable product lifecycle product lifespan
<b>Outcomes: DT and Design Knowledge and Assessment</b>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Understand how beef gets from the farm to our plates.</li> <li>Present a subject as a poster with clear information in an easy to read format.</li> <li>Contribute ideas as to what a 'healthy meal' means.</li> <li>Notice the nutritional differences between different products and recipes.</li> <li>Recognise nutritional differences between two similar recipes and give some justification as to why this is.</li> <li>Work as a team to amend a bolognese recipe with healthy adaptations.</li> <li>Follow a recipe to produce a healthy bolognese sauce.</li> <li>Design packaging that promotes the ingredients of the bolognese.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Consider a range of factors in their design criteria and use this to create a waistcoat design.</li> <li>Use a template to mark and cut out a design.</li> <li>Use a running stitch to join fabric to make a functional waistcoat.</li> <li>Attach a secure fastening, as well as decorative objects.</li> <li>Evaluate their final product.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief.</li> <li>Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen.</li> <li>Identify errors (bugs) in the code and suggest ways to fix (debug) them.</li> <li>Self and peer evaluate a product concept against a list of design criteria with basic statements.</li> <li>Identify key industries that use 3D CAD modelling and why.</li> <li>Recall and describe the name and use of key tools used in Tinkercad (CAD) software.</li> <li>Combine more than one object to develop a finished 3D CAD model in Tinkercad.</li> <li>Complete a product pitch plan that includes key information.</li> </ul>

## Year B - YEAR 5/6

	Autumn	Spring	Summer
DT focus	<b>Mechanical Systems</b>	<b>Structures</b>	<b>Electrical Systems</b>
<b>Key Skills and Techniques</b>	Designing a pop-up book which uses a mixture of structures and mechanisms. Naming each mechanism, input and output accurately. Storyboarding ideas for a book. Following a design brief to make a pop up book, neatly and with focus on accuracy. Making mechanisms and/or structures using sliders, pivots and folds to produce movement. Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. Evaluating the work of others and receiving feedback on own work. Suggesting points for improvement.	Designing a playground featuring a variety of different structures, giving consideration to how the structures will be used. Considering effective and ineffective designs. Building a range of play apparatus structures drawing upon new and prior knowledge of structures. Measuring, marking and cutting wood to create a range of structures. Using a range of materials to reinforce and add decoration to structures. Improving a design plan based on peer evaluation. Testing and adapting a design to improve it as it is developed. Identifying what makes a successful structure.	Designing a steady hand game, identifying and naming the components required. Drawing a design from three different perspectives. Generating ideas through sketching and discussion. Modelling ideas through prototypes. Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. Constructing a stable base for a game. Accurately cutting, folding and assembling a net. Decorating the base of the game to a high-quality finish. Making and testing a circuit. Incorporating a circuit into a base. Testing their own and others' finished games, identifying what went well and making suggestions for improvement.



			Gathering images and information about existing children's toys. Analysing a selection of existing children's toys.
<b>Key Knowledge</b>	To know that mechanisms control movement. To understand that mechanisms can be used to change one kind of motion into another. To understand how to use sliders, pivots and folds to create paper-based mechanisms. To know that a design brief is a description of what I am going to design and make. To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	To know that structures can be strengthened by manipulating materials and shapes. To understand what a 'footprint plan' is. To understand that in the real world, design can impact users in positive and negative ways. To know that a prototype is a cheap model to test a design idea.	To know that 'form' means the shape and appearance of an object. To know the difference between 'form' and 'function'. To understand that 'fit for purpose' means that a product works how it should and is easy to use. To know that 'form over purpose' means that a product looks good but does not work very well. To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. To understand the diagram perspectives 'top view', 'side view' and 'back'.
<b>Suggested tasks</b>	KAPOW: Making a Pop Up Book (Year 5)	KAPOW: Playgrounds (Year 6)	KAPOW: Steady Hand Game (Year 6)
<b>Vocabulary</b>	design input motion mechanism criteria research reinforce model	apparatus design criteria equipment playground landscape features cladding	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
<b>Outcomes: Knowledge and Assessment</b>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Produce a suitable plan for each page of their book.</li> <li>Produce the structure of the book.</li> <li>Assemble the components necessary for all their structures/mechanisms.</li> <li>Hide the mechanical elements with more layers using spacers where needed.</li> <li>Use a range of mechanisms and structures to illustrate their story and make it interactive for the users.</li> <li>Use appropriate materials and captions to illustrate the story.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Create five apparatus designs, applying the design criteria to their work.</li> <li>Make suitable changes to their work after peer evaluation.</li> <li>Make roughly three different structures from their plans using the materials available.</li> <li>Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas.</li> <li>Secure their apparatus to a base.</li> <li>Make a range of landscape features using a variety of materials which will enhance their apparatus.</li> </ul>	Pupils who are <b>secure</b> will be able to: <ul style="list-style-type: none"> <li>Explain simply what is meant by 'form' (the shape of a product) and 'function' (how a product works).</li> <li>State what they like or dislike about an existing children's toy and why.</li> <li>Learn about skills developed through play and apply this knowledge in a survey of one or more children's toys.</li> <li>Identify the components of a steady hand game.</li> <li>Design a steady hand game of their own according to their design criteria, using four different perspective drawings.</li> <li>Create a secure base for their game, with neat edges, that relates to their design.</li> <li>Make and test a functioning circuit and assemble it within a case.</li> </ul>

