Design and Technology Progression Plan – Heath Mount Primary School		
EYFS		
ELG Physical Development	Moving and Handling	• To handle equipment and tools effectively, including pencils for writing.
ELG Expressive art and Design	Exploring and Using Media and Materials	• To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function
	Being Imaginative	• To use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through • design and technology, art, music, dance, role play and stories.

National Curriculum - Design		
Year 1 **Year 2**	**Year 3** **Year 4**	**Year 5** **Year 6**
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.	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.

National Curriculum - Make					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
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.		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.	

National Curriculum - Evaluate					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria.		Investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria.		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 to shape the world.	

National Curriculum – Technical Knowledge					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.		Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].		Understand and use electrical systems in their products [series circuits incorporating switches, bulbs, buzzers and motors]. Apply their understanding of computing to program, monitor and control their products..	

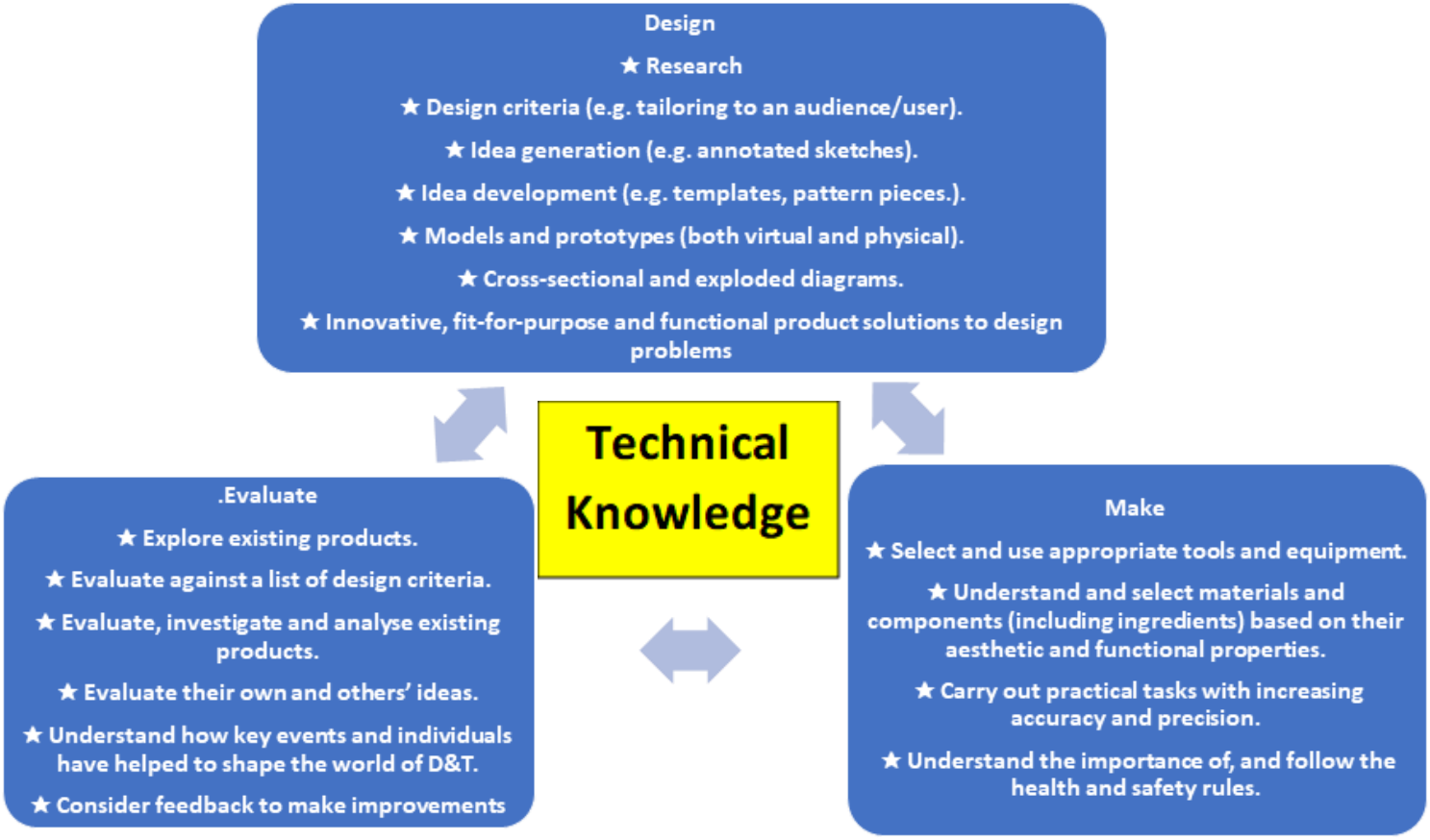
National Curriculum – Cooking and Nutrition					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
		Understand and apply the principles of a healthy and varied diet. Understand seasonality. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.		Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	

The 5 key areas are revisited throughout Key stage 1 and 2 to enable progression of skills.

Cooking and Nutrition **KS2** Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced	Where food comes from, balanced diet, preparation and cooking skills. Kitchen hygiene and safety. Following recipes.	**KS1** Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals.
		KS2 Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced
Mechanisms/mechanical systems	Mimic natural movements using mechanisms such as cams, followers, levers and sliders.	**KS1** Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products.
		KS2 Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers.
Structures	Material functional and aesthetic properties, strength and stability, stiffen and reinforce structures.	**KS1** Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error.
		KS2 Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures.

Textiles	Fastening, sewing, decorative and functional fabric techniques including cross stitch, blanket stitch and appliqué.	**KS1** Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique
		KS2 Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their: ● Strength. ● Appropriate use. ● Design.
Electrical systems	Operational series circuits, circuit components, circuit diagrams and symbols, combined to create various electrical products	**KS2 Only** Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can: ● Protect the circuitry. ● Reflect light. ● Conduct electricity. ● Insulate.

The Design and technology National Curriculum outlines the three main stages of the design process: design, make and evaluate. Each Scheme of learning follows these stages, to form a full project. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual and technical understanding, required for each strand.



HEATH MOUNT PRIMARY SCHOOL

Year 1	
Design & Technology: Structures This project teaches children about making and strengthening free standing structures, including different ways of joining materials. The children will design and make a model of a house for little red riding hood using a design brief and design criteria. The children will learn different joining techniques and strengthening Techniques as they make small items of furniture and add a roof to their house. They will discuss their design ideas, any successes or problems they encountered and how they fulfilled the essential design criteria.	Design & Technology: Mechanical Systems In this unit the children will examine a range of lever and slider mechanisms. They will evaluate a range of existing products (books) with levers and sliders. The children will use focused practical tasks to practise making simple up/down and side to side mechanisms. They will design and make a moving story book base on a famous person/event.
Focus: Structures **Aspect: Freestanding structures** **Outcome: Design and make a house for little red riding hood.**	**Focus: Mechanisms** **Aspect: Levers and sliders** **Outcome: Design and make a moving picture book**

Designing

- Generate ideas based on simple design criteria and their own experiences, explaining what they could make.
- Develop, model and communicate their ideas through talking, mock-ups and drawings.
- Design a functional and appealing product for a chosen user and purpose based on simple design criteria.
- Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, and mock-ups.
- Generate ideas based on simple design criteria and their own experiences, explaining what they could make.
- Develop, model and communicate their ideas through drawings and mock-ups with card and paper.

Making

- Plan by suggesting what to do next.
- Select and use tools, skills and techniques, explaining their choices.
- Select new and reclaimed materials to build their structures.
- Use simple finishing techniques suitable for the structure they are creating.

Evaluating

- Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.
- Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.
- Explore and evaluate a range of existing textile products relevant to the project being undertaken.
- Evaluate their ideas throughout and their final products against original design criteria.
- Explore a range of existing books and everyday products that use simple sliders and levers. • Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.

Technical knowledge and understanding • Understand how simple 3-D textile products are made, using a template to create two identical shapes.

- Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.
- Know and use technical vocabulary relevant to the project
- Explore and use sliders and levers.
- Understand that different mechanisms produce different types of movement.
- Know and use technical vocabulary relevant to the project.

<table>
<tr><th colspan="2">Year 2</th></tr>
<tr><td>Design & Technology: Textiles
In this unit the children will design and create a hand puppet. They will look at different types of puppets and look specifically at how hand puppets are made including the fabric used, joining techniques, fastening and decoration. They will investigate different joining techniques and make a paper prototype of their puppet before going on to design their own puppet based on an African animal which they then make and evaluate.</td><td>Design & Technology: Mechanisms
In this unit the children will explore and evaluate a range of wheeled toys considering how the wheels move, how they are fixed on, etc. They will draw examples of wheeled products and label the main parts. The children will go on to use construction kits with wheels and axles learning how they are assembled as free or fixed axles. They will look at how to make axle holders and practise their skills of marking out, holding, cutting and joining. They will go on to design and make their own moving vehicle.</td></tr>
<tr><td>Focus: Textiles
Aspect: Joining Fabric
Outcome: Design and make a hand puppet</td><td>Focus: Mechanisms
Aspect: Wheels and Axles
Outcome: Make a moving vehicle</td></tr>
<tr><td colspan="2">Designing
• Generate initial ideas and simple design criteria through talking and using own experiences.
• Develop and communicate ideas through drawings and mock-ups.
Making
• Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.
• Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.
Evaluating
• Explore and evaluate a range of products with wheels and axles.
• Evaluate their ideas throughout and their products against original criteria.
• Using the views of others to improve designs. • Test and modify the outcome, suggesting improvements
Technical Knowledge
• Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles.
• Know and use technical vocabulary relevant to the project.
• 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 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.</td></tr>
</table>

<table>
<tr><th colspan="2">Year 3</th></tr>
<tr><td>Cooking & Nutrition:
In this unit pupils will explain why food comes from different places around the world. The children will learn about the benefits of seasonal foods and develop cutting and peeling skills. The pupils will design and evaluate a seasonal dish.</td><td>Design & Technology: Electrical Systems
In this unit the pupils will carry out research about the Romans to develop a range of initial ideas. They will develop their initial ideas into a final design and assemble a final product and incorporate a simple circuit.</td></tr>
<tr><td>Focus: Cooking and Nutritional
Aspect: Seasonal Foods
Outcome: Learning about seasonal foods and using their understanding to create a seasonal food tart.</td><td>Focus: Electrical systems
Aspect: simple circuit
Outcome: Introducing information design and developing an electric display based on the Romans.</td></tr>
<tr><td colspan="2">Designing
• Design a functional and appealing product for a chosen user and purpose based on simple design criteria.
• Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates and mock-ups.
• Gather information and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.
• Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, and exploded diagrams.
Making
• Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.
• Select from and use textiles according to their characteristics.
• Order the main stages of making.
• Select from and use tools and equipment to cut, shape, join and finish with some accuracy.
• Plan the main stages of a recipe, listing ingredients, utensils and equipment.
• Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.
• Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.
Evaluating
• Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences
• Evaluate ideas and finished products against design criteria, including intended user and purpose.
Technical knowledge
• Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.
• Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The Eatwell plate.
Know and use technical and sensory vocabulary relevant to the project.</td></tr>
</table>

Year 4		
Cooking & Nutrition Children will complete research into existing products. They will investigate the ingredients used and the origins of these ingredients including fair trade. They will evaluate a range of cookie products. The children will use focused practical tasks to measure out, cut, shape, combine products. They investigate what ingredients could be changed or added to recipes and how this would affect the taste, smell, texture and appearance. The children go on to create a healthier cookie thinking about a healthy diet and recall knowledge of the Eatwell plate from Year 2.	Design & Technology: Structures Children will explore different types of shelter. They will consider where and when they are used, what the key features and components are, and how they work. They will investigate different types of shelter.	Design & Technology: Electrical Systems Children will explore different examples of information displays and consider their function. They will also consider where they are used, what the key features and components are, and how they work. They will investigate simple circuits. The children will carry out focused practical tasks to explore how to make different circuits which make things light up. The children will design an information poster based on the theme of the Ancient Egyptians that has an electrical component. They will then make and evaluate their product against agreed design criteria.
Focus: Cooking and nutrition **Aspect: Healthy diet and adapting a recipe.** **Outcome: Design and make a healthier cookie using at least one fair trade ingredient.**	**Focus: Structures** **Aspect: Structures** **Outcome: To make a shelter**	**Focus: Electrical Systems** **Aspect: Simple circuits** **Outcome: Design an information poster based on Ancient Egyptians**
Designing • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates and mock-ups. • Gather information and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, and exploded diagrams. **Making** • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. • Select from and use textiles according to their characteristics. • Order the main stages of making.		

- Select from and use tools and equipment to cut, shape, join and finish with some accuracy.
- Plan the main stages of a recipe, listing ingredients, utensils and equipment.
- Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.
- Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.

Evaluating

- Explore and evaluate a range of existing textile products relevant to the project being undertaken.
- Evaluate their ideas throughout and their final products against original design criteria.
- Investigate and analyse a range of existing information posters.
- Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.
- Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.
- Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.

Technical knowledge and understanding

- Know how to use appropriate equipment and utensils to prepare and combine food.
- Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. Know about Fair-trade and fair trade products. • Know and use relevant technical and sensory vocabulary appropriately.
- Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.
- Apply their understanding of computing to program and control their products.
- Know and use technical vocabulary relevant to the project.

Designing NA **Making** • Plan by suggesting what to do next. • Select and use tools, skills and techniques, to measure, cut and join materials to make a frame. • Reinforcing corners to strengthen a structure • Use simple finishing techniques suitable for the structure they are creating. **Evaluating** • Evaluate their product by discussing how well it works in relation to the purpose, **Technical knowledge** • Know how to make a frame structure stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project	**Designing** • Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. • Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, and exploded diagrams. **Making** • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy. • Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. **Evaluating** • Investigate and analyse a range of existing battery-powered products. • Evaluate their ideas and products against their own design criteria and identify the	**Designing** • Generate innovative ideas through research • Develop, model and communicate ideas through talking, drawing, templates, mock-up sand prototypes including using computer-aided design. • Design a purposeful, functional, appealing product for the intended user that is fit for purpose based on a simple design specification. **Evaluating** • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. **Technical Knowledge** • Develop and use knowledge of how to construct strong, stiff shell structures.

	strengths and areas for improvement in their work. **Technical knowledge** •	• Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Know and use technical vocabulary relevant to the project. • Know how to use TinkerCad to create 3D designs. • Know that a paper net is a flat 2D shape that can become a 3D shape once • assembled.

Year 5		
Design & Technology: Textiles In this unit the children will design and create a small pouch for a pair of binoculars. They will look at how they are made, including the fabric used, joining techniques, fastening and decoration. They will try out different joining techniques and different design techniques before going on to design their own binocular pouch which they then make and evaluate. **Focus: Structures** **Aspect: CAD and designing** **Outcome: Make a binocular pouch**	Design & Technology: Structures In this unit, pupils will research about Ancients Greeks and their shields. They will learn about the features of an Ancient Greek shield and use their research to design an Ancient Greek shield. The pupils will design and make their shield and evaluate the end product. **Focus: Structures** **Aspect: Structures** **Outcome: To design and make an Ancient Greek shield**	Cooking & Nutrition: In this unit, pupils will explore the differences between fruits and vegetables using their senses (taste, texture, smell etc). They will listen to the story 'The best pumpkin soup' and discuss the key ingredients the characters used before developing a class-based vegetable soup recipe. **Focus: Cooking and Nutrition** **Aspect: Soup** **Outcome: Develop a class-based vegetable soup recipe**

Designing

- Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user.
- Use annotated sketches and prototypes to develop, model and communicate ideas.
- Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.
- Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.
- Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.
- Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.
- Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

Making

- Order the main stages of making.
- Select from and use appropriate tools with some accuracy to cut, shape and join paper and card.
- Select from and use finishing techniques suitable for the product they are creating.
- Write a step-by-step recipe, including a list of ingredients, equipment and utensils
- Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.
- Make, decorate and present the food product appropriately for the intended user and purpose.
- Order the main stages of making.
- Select from and use tools and equipment to cut, shape, join and finish with some accuracy.
- Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

Evaluating

- Investigate and analyse books and, where available, other products with lever and linkage mechanisms.
- Evaluate their own products and ideas against criteria and user needs, as they design and make

Technical knowledge and understanding • Know how to use utensils and equipment to prepare food.

- Understand about seasonality in relation to food products and the source of different food products.

Know and use relevant technical and sensory vocabulary.

Year 6	
Design & Technology: Mechanical Systems In this unit, pupils will create design criteria to meet a user's needs. They will use an exploded diagram to assemble a frame and explore a mechanism to inform a design decision. The pupils will evaluate a completed design.	Design & Technology: Electrical Systems In this unit, children designing a steady hand game, identifying and naming the components required. They will generate ideas through sketching and discussion and draw a design from three different perspectives. Constructing a stable base for a game. They will develop skills in accurately cutting, folding and assembling a net shape and decorate the base of the game to a high-quality finish. They will make and test a circuit and incorporate the circuit into the base. They will test and evaluate their own and others' finished games identifying what went well and making suggestions for improvement. They will gather images and information about existing children's toys and analyse a selection of existing children's toys.
Aspect: Mechanical Systems **Focus: Automata toys** **Outcome: Developing functional automata toys for a window display using cams, followers and axles to create movement.**	**Aspect: Electrical Systems** **Focus: Steady hand game** **Outcome: To design a steady hand game of their own according to their design criteria.**

Design

- Noticing wider-reaching problems or needs in the community.
- Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.
- Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.

Make

- Producing lists of equipment, materials and tools that they need for a task.
- Selecting materials, components or ingredients based on research or user needs.
- Explaining their choices, referring to their research.
- Considering which equipment will work well together.
- Choosing from the known range of equipment available to them with little guidance.
- Assessing risks associated with different tools and equipment.
- Understanding and explaining the importance of each safety rule.
- Consistently apply safety instructions.
- Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups.
- Cutting in a back-and-forth sawing motion where appropriate
- In supervised groups, using hot glue guns safely.
- Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.

Evaluate

- Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.
- Providing feedback that is helpful, specific and encouraging.
- Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had**.**

Key Knowledge

- 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'.