Design and Technology Progression Plan – Highters Heath Community 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		Understand and use electrical systems in their products [series circuits incorporating switches, bulbs, buzzers and motors].	

	products [for example, gears, pulleys, cams, levers and linkages].	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 where food comes from. Use the basic principles of a healthy and varied diet to prepare dishes.		Understand and apply the principles of a healthy and varied diet. Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.		Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. Understand seasonality. Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	

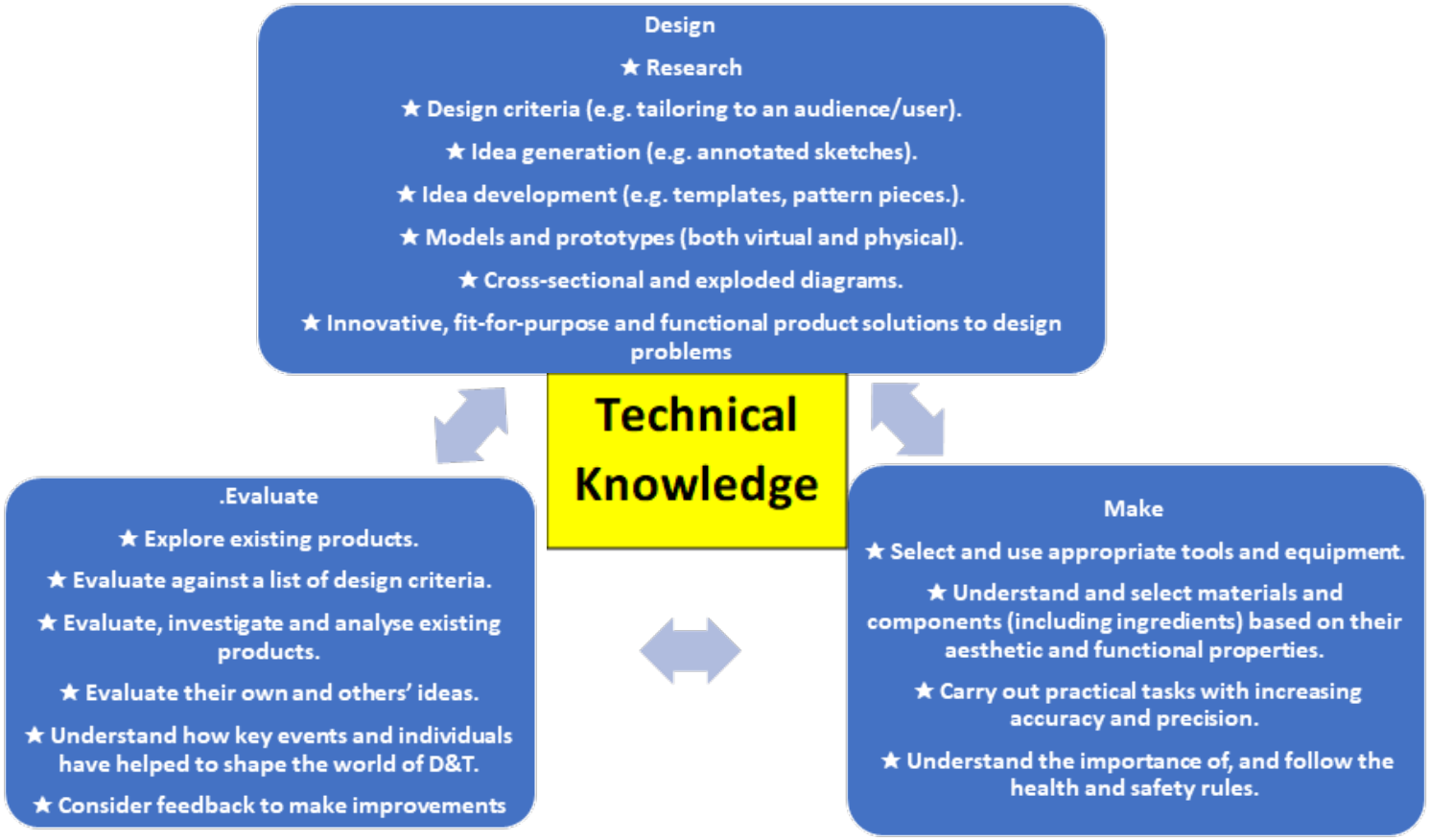
The 5 key areas are revisited throughout Key stage 1 and 2 to enable progression of skills.

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.

he 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.



Annual Overview

Autumn					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Free standing structures Design and make a house for little red riding hood.	**Mechanisms Wheels and axles Design and make a model of a fire engine**	**Textiles Decorating and joining fabric Design and make a pouch for binoculars**	**Structures (and mechanisms) Frame structures Make a model of a Roman Onager**	**Mechanisms Levers and linkages /lever and sliders Design and make a moving picture book based on a Tudor monarch.**	**Textiles Using templates, 2D to 3D and surface embellishment Design and make an item using recycled fabric (sustainability) based on WW2 'Make do and mend'**
Spring					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Textiles Joining fabrics Design and make a hand puppet	**Cooking and Nutrition Preparing fruit and vegetables**	**Electrical Systems Simple electrical circuit Design and make an information poster.**	**Electrical systems Circuit with a switch Design and make a simple torch**	**Cooking and Nutrition Healthy eating and the Eat-well plate Healthy salads**	**Digital world CAD and Control Design and programme a navigation tool for trekkers travelling to China.**
Summer					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Mechanisms Levers and sliders Design and make a moving picture book	**Mechanisms Pop up cards /levers Design and make a pop-up card**	**Cooking and Nutrition Adapting a recipe to make it healthier and fairtrade.**	**Structures CAD Design a shelter**	**Electrical Systems Circuit with a buzzer and a light Design and make a steady hand game with a message**	**Structures Frame and solid structures Design and make a birdhouse**

Year 1 Autumn term	Year 1 Spring term	Year 1 Summer Term
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.	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.	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: Textiles** **Aspect: Joining Fabric** **Outcome: Design and make a hand puppet**	**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. **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	**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. **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.	**Designing** • 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, explaining their choices, to cut, shape and join paper and card. • Use simple finishing techniques suitable for the product they are creating.

for the structure they are creating.	**Evaluating**	**Evaluating**

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. **Technical knowledge and understanding** • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project.	• 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. **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 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** • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project.
Year 2 Autumn term	**Year 2 Spring term**	**Year 2 Summer Term**
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.	In this unit the children will examine a range of fruits and vegetables thinking about the appearance, texture, smell and taste. They will evaluate a range of food products to help inform their design ideas. The children will use focused practical tasks to practise using simple utensils to wash, grate, peel, slice, squeeze. They will discuss healthy eating and the need to eat fruits and vegetables as part of a balance diet. The children will design and make their own healthy snack for their partner class to evaluate using agreed design criteria.	In this unit the children will explore a range of pop-up mechanisms.. They will evaluate a range of pop-up products (books/cards) to help inform their design ideas. The children will use focused practical tasks to practise creating different popup mechanisms before deciding which mecHanism is the most effective.They will go on to design and make their own pop up book.

Focus: Mechanisms **Aspect: Wheels and Axles** **Outcome: Make a moving vehicle**	**Focus: Cooking and nutrition** **Aspect: Preparing fruit and vegetables** **Outcome: Design and make a healthy snack**	**Focus: Mechanisms** **Aspect: Pop-up mechanisms (Levers and sliders)** **Outcome: Make a pop-up greeting card**
Designing	**Designing**	**Designing** • Generate initial ideas and simple design criteria

• 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. **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.	• Design appealing products for a particular user based on simple design criteria. • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. • Communicate these ideas through talk and drawings. **Making** • 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	Design a pop-up card which uses pop-up mechanisms. **Making** • Follow a design brief to make a pop-up card, neatly and with focus on accuracy. • Make mechanisms using folds to produce movement. **Evaluating** • Using the views of others to improve designs. • Test and modify the outcome, suggesting improvements **Technical knowledge** • 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.

	vocabulary relevant to the project.	

Year 3 Autumn term	Year 3 Spring term	Year 3 Summer Term
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.	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.	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.
Focus: Textiles **Aspect: decorating and joining fabric** **Outcome: Make a binocular pouch**	**Focus: Electrical systems** **Aspect: simple circuit** **Outcome: Design and make an information poster.**	**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.**

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. **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.	**Designing** • 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** • Order the main stages of making. • Select from and use tools and equipment to cut, shape, join and finish with some accuracy.	**Designing** • Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. • Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. **Making** • Plan the main stages of a recipe, listing ingredients, utensils and equipment.

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. **Technical Knowledge** • 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 • Explore different finishing techniques e.g. using stitching, sequins, buttons and ribbons. • Know and use technical vocabulary	• 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 information posters. • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. **Technical knowledge** • Understand and use electrical systems in their products, such as a simple circuit.	• 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. **Evaluating** • 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** • Know how to use appropriate equipment

relevant to the project.	• Know and use technical vocabulary relevant to the project.	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.
Year 4 Autumn term	**Year 4 Spring term**	**Year 4 Summer Term**
Children will explore different examples of siege engines. They will consider when they were used, what the key features and components are, and how they work. They will investigate frame structures and relevant mechanisms.The children will carry out focused practical tasks to explore how to make a frame structure. The children will make a model of a Roman onager. They will then	Children will explore different examples of battery powered products. They will consider where they are used, what the key features and components are, and how they work. They will investigate examples of torches. They will investigate simple circuits with a switch. The children will carry out focused practical tasks to explore how to make different circuits which make things light up using their science	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. They will investigate 3D design drawing using TinkerCad. The focus for this project is on design skills using computer software to *generate design ideas*. The children will design
test and evaluate their product against agreed design criteria.	knowledge. The children will design a product that has an electrical component. They will then make and evaluate their product against agreed design criteria.	
Focus: Structures and mechanisms **Aspect: frame structures** **Outcome: Make a model of a Roman onager.**	**Focus: Electrical systems** **Aspect: simple circuit with a switch** **Outcome: Design and make a simple torch.**	**Focus: Structures (shell structures) Aspect: CAD and designing.** **Outcome: Make a binocular pouch**

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. **Making.** • Construct a range of 3D geometric shapes using nets . • Use CAD (TinkerCad) to design a product that meets the design criteria. **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** • Understand and use electrical systems in their products, such as series circuits incorporating switches and bulbs. • Know and use technical vocabulary relevant to the project.	• 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 Autumn term	**Year 5 Spring term**	**Year 5 Summer Term**
In this unit the children investigate different types of movement: rotary, oscillating and reciprocating. They will explore existing products that use levers and linkages and pop-up mechanisms. The children go on to design a page for a pop-up/moving story book based on a Tudor Monarch. . They develop the skills of designing (storyboarding), marking, cutting and joining. The children go on to consider how it will move and also the finishing techniques they will use to create the finished product in order to hide the working mechanism	Children will learn about the wide variety of different salads available, the origins of some of them and the ingredients they contain. They will identify and sort salad components into the Balance of Good Health food groups and understand how different salads can contribute to a healthy diet. They will learn which food groups they should be eating most. They will learn which foods provide a good sources of energy (Bread, other cereals and potatoes group) and that these can form a base for salads. Children will research their salad by tasting ingredients and using different research techniques, e.g. the internet. They will expand their food skills and sensory vocabulary by expressing taste preferences and explaining their reasons. They will revise and practise hygiene rules, safe use of equipment and safe food storage. Children will develop criteria for their product and plan their work in a detailed	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.

	way. They will plan their ingredient choices thoughtfully, considering the taste and the appearance of the product, and their criteria.	

	Children will make various dishes, demonstrating a range of food skills. Children will present their work, explaining their decisions and evaluating their salad against the original criteria. They will evaluate the work of others.	
Focus: Mechanisms **Aspect: pop-up and levers and linkages** **Outcome: Make a moving/pop-up story book.**	**Focus: Cooking and nutrition** **Aspect: Healthy eating and seasonality** **Outcome: Design and make a healthy salad.**	**Focus: Electrical systems** **Aspect: simple circuit with a buzzer and a switch** **Outcome: Design and make a steady hand game.**
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. **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. **Evaluating** • Investigate and analyse books and, where	**Designing** • 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. **Making** • 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	**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, cross-sectional 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

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**	appropriate ingredients. • Make, decorate and present the food product appropriately for the intended user and purpose. **Evaluating**	functional properties and aesthetic qualities. **Evaluating** • Investigate and analyse a range of existing battery-powered products.

• Understand and use lever and linkage mechanisms and pop-up mechanisms • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project.	• Carry out sensory evaluations of a range of relevant products and ingredients. • Record the evaluations using e.g. tables/graphs/charts such as star diagrams. • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. **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.	• Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. **Technical knowledge and understanding** • 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.
Year 6 Autumn term	**Year 6 Spring term**	**Year 6 Summer Term**
Children learn about 'make do and mend' initiatives in WWII. They will investigate and evaluate a range of products which have been produced by combining fabric shapes and patterns. They will look at how existing products	Pupils receive a design brief from a client, across the globe, to develop a navigation tool for their customers. They develop an informed design brief and criteria based on information extracted and analysed from the client's letter. Children	In this unit, children learn about structures and frame structures.They learn that structures can fail when loaded, and the use of techniques for reinforcing and strengthening structures. The main outcome of this unit will be the design and

have been constructed, disassembling products to look at the shapes, how they have been joined, strengthened or stiffened. They will look at fastenings that have been used. The children will undertake focused practical tasks to develop skills if sewing using a range of stitches. They will make seams, tacking fabrics together. They will practise making 2D patterns using grid or tracing paper to create a mock up before they go on to design and make a product using recycled fabric.	program a navigation tool, combining multiple functions learnt across the Digital world units and new functions such as a cardinal compass, to produce a multifunctional device for trekkers. Test, error check and debug the program using a simulator. Learning about the impact humans are having on the planet, and consider methods to improve our current habits. Looking from the perspective of a designer, and consider how we can make more sustainable material choices.	construction of a framework-type shelter for an identified purpose. They will consider environmental issues and design and make a bird box (nesting box). They will also consider sustainability and use recycled or reclaimed materials where possible.

	Understanding what is meant by 'concept' and develop an idea for housing the processor (Micro:bit) of our Navigation tool. Learning about the applications of 3D modelling and printing in industry such as film and animation. Developing existing essential 3D CAD skills to combine 3D objects to form a complete product in CAD 3D modelling software. Navigation tool will need based on customer habits.	
Aspect: Textiles **Focus: Combining different fabric shapes** **Outcome: Recycling - Make do and mend project**	**Aspect: CAD and Control** **Focus: digital / CAD and Control** **Outcome: Design and programme a navigation tool for trekkers.**	**Aspect: Structures** **Focus: Frame structures** **Outcome: Design and make a bird house.**

Designing • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. **Making** • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished.	**Designing** • Write a design brief from information submitted by a client. • Develop design criteria to fulfil the client's request. • Consider and suggest additional functions for my navigation tool. • Develop a product idea through annotated sketches. • Place and manoeuvre 3D objects, using CAD. • Change the properties of, or combining one or more 3D objects, using CAD. **Making** • Consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). • Explain material choices and why they were chosen as part of a product concept. • Programme an N,E, S, W cardinal compass.	**Designing** • Carry out research on existing products using web-based resources. • Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. **Making** • Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.

• Work within the constraints of time, resources and cost. **Evaluating** • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. **Technical knowledge and understanding** • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate	**Evaluate** • Explain how my program fits the design criteria and how it would be useful as part of a navigation tool. • Develop an awareness of sustainable design. • Identify key industries that utilise 3D CAD modelling and explaining why. • Describe how the product concept fits the client's request and how it will benefit the customers. • Explain the key functions in my program, including any additions. • Explain how my program fits the design criteria and how it would be useful as part of a navigation tool. • Explain the key functions and features of my navigation tool to the client as part of a product concept pitch. • Demonstrate a functional program as part of a product concept pitch. **Technical Knowledge** • To know that accelerometers can detect movement. • To understand that sensors can be useful in products as they mean the product can function without human input. • To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request. • To know that 'multifunctional' means an	• Use finishing and decorative techniques suitable for the product they are designing and making. **Evaluating** • Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. • Research key events and individuals relevant to frame structures. **Technical Knowledge** • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project.

	object or product has more than one function.	
	• To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.	