Design Technology Curriculum

Intent	The Design and technology curriculum aims to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation, and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others. Through our curriculum, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements. Our Design and technology curriculum enables pupils to meet the end of key stage attainment targets in the National curriculum and the aims also align with those in the National curriculum. EYFS (Reception) units provide opportunities for pupils' to work towards the Development matters statements and the Early Learning Goals.
Implementation	The Design and technology National curriculum outlines the three main stages of the design process: design, make and evaluate. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical, and technical understanding required for each strand. Cooking and nutrition* has a separate section, with a focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality. The National curriculum organises the Design and technology attainment targets under four subheadings: Design, Make, Evaluate, and Technical knowledge. We have taken these subheadings to be our primary strands: Design, Make, Evaluate and Technical knowledge. Meadow Park Academy's Design and technology curriculum has a clear progression of skills and knowledge within these strands and key areas across each year group. Our progression of skills and knowledge shows what is taught within each year group and how these skills develop to ensure that attainment targets are securely met by the end of each key stage. Cooking and nutrition is given a particular focus in the National curriculum and we have made this one of our six key areas that pupils revisit throughout their time in primary school: Cooking and nutrition; Mechanisms/ Mechanical systems; Structures; Textiles; Electrical systems (KS2 only) and Digital world (KS2 only). Each of our key areas follows the design process (design, make and evaluate) and has a particular theme and focus from the technical knowledge or cooking and nutrition section of the curriculum. This is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing pupils to revisit and build on their previous learning. Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks. This variety means that lessons are engaging and appeal to those with a variety of learning styles. Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.

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Impact

The impact of the design and technology curriculum can be constantly monitored through both formative and summative assessment opportunities. After the implementation of the Design and technology curriculum, pupils should leave school equipped with a range of skills to enable them to succeed in their secondary education and be innovative and resourceful members of society.

The expected impact of following the Design and technology curriculum is that children will:

➔ Understand the functional and aesthetic properties of a range of materials and resources.

➔ Understand how to use and combine tools to carry out different processes for shaping, decorating, and manufacturing products.

➔ Build and apply a repertoire of skills, knowledge and understanding to produce high quality, innovative outcomes, including models, prototypes, CAD, and products to fulfil the needs of users, clients, and scenarios.

➔ Understand and apply the principles of healthy eating, diets, and recipes, including key processes, food groups and cooking equipment.

➔ Have an appreciation for key individuals, inventions, and events in history and of today that impact our world.

➔ Recognise where our decisions can impact the wider world in terms of community, social and environmental issues.

➔ Self-evaluate and reflect on learning at different stages and identify areas to improve.

➔ Meet the end of key stage expectations outlined in the National curriculum for Design and technology.

➔ Meet the end of key stage expectations outlined in the National curriculum for Computing.

Long Term Overview: **Design Technology**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	**Structures - Junk Modelling** Children will explore structural elements such as material and shape to create junk models. **Key people** Gustave Eiffel ● A French engineer born in 1832. ● Designed interior structural elements of the Statue of Liberty. ● Best known for the Eiffel Tower, which was designed by his company and named after him **Curriculum Links** **EAD** •Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.		**Cooking & Nutrition - Soup** Children will work as a group to plan, prepare and cook a soup using seasonal vegetables. **Curriculum Links** **EAD** •Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used. • Make use of props and materials when role playing characters in narratives and stories		**Structures – Pen pot** Children will apply their prior knowledge of junk modelling and design and create a stable pen pot. **Curriculum Links** **EAD** •Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used. • Make use of props and materials when role playing characters in narratives and stories	

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	• Share their creations, explaining the process they have used. • Make use of props and materials when role playing characters in narratives and stories					
Year 1		**Textiles - Puppet** Children will design and sew, using a simple running stitch, a puppet. **Curriculum Links** **History - Toys**		**Cooking & Nutrition - Smoothies** Children will taste a range of fruit and then use this knowledge to plan and make a fruit smoothie of their own. **Key people** Jamie Oliver ● Helped raise awareness about the quality of school dinners in 2005. More recently, he has voiced concerns about the effect of the pandemic on food choices. ● He supports teachers, charities and young people who are looking to change mindsets so every child gets healthy, nutritious food, providing the opportunity for dietary health. ● He is also a celebrity chef who designs healthy and affordable meals for people to cook themselves. **Curriculum Links**		**Mechanical Systems – Moving Aquarium Slider** Children will design and create a moving aquarium with fish that slide in and out. **Curriculum Links** **Science - Animals including humans**
Year 2	**Structures – Baby Bear's Chair** Children will use their prior learning of structures and design a structurally sound chair for Baby Bear from the story with Goldilocks. **Curriculum Links**			**Mechanical Systems – Fairground Wheel** Children will create a moving fairground wheel using mechanical systems. **Curriculum Links** **Experiences**		**Textiles - Cushion** Children will design and sew a simple cushion with a cross stitch or applique design. **Curriculum Links** **Experiences**
Year 3		**Cooking & Nutrition – Adapting a recipe** Children will use an existing biscuit recipe to adapt and design their own biscuit before making it. **Curriculum Links** **Science – Nutrition** **Experiences**		**Mechanical Systems – Pneumatic Toys** Children will design and create a pneumatic toy. **Key people** Otto von Guericke (1650s) ● A German physicist who invented a vacuum pump; a device that pulls air out of a container. ● This helped him learn that air has weight and can create a pushing force. William Murdoch (early 1800s) ● A Scottish engineer who invented a pneumatic tube system that uses air to push capsules carrying letters and documents over distances. ● The U.S. Post Office used this system in 1875. **Curriculum Links**		**Digital World – Wearable Tech** Children will use CAD software to design and create wearable technology. **Key people** Christopher Latham Sholes ● Patented the typewriter in 1868 Seymour Rubenstein and Rob Barnaby ● Credited with the invention of the first word processor. **Curriculum Links** **Experiences**

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				Science – Forces **Experiences**		
Year 4	**Textiles - Fastenings** Children will design and sew a book pouch with a fastening of their choice. **Curriculum Links** **Experiences**			**Structures - Castle** Children will design and create a solid castle suitable for Henry VIII to live in. **Key people** *Eugène Viollet-le-Duc ● A French architect and author, Viollet-le-Duc was famous for his interpretive "restorations" of medieval buildings. ● He redesigned parts of the famed Notre-Dame Cathedral in Paris and numerous castles, enhancing the structures while maintaining their historical significance. ● He could provide a good example of understanding and employing 3D shapes and structures for creating strong architectural forms. Alan Lee and John Howe ● While not architects in a traditional sense, illustrators Alan Lee and John Howe played a significant role in designing structures, including castles, for the "Lord of the Rings" film series. ● Their work, while grounded in fantasy, offers a detailed study of castle design, construction, and aesthetics. **Curriculum Links** **History – Tudors** **Experiences** Hampton Court Palace		**Electrical Systems - Torches** Children will design and create their own working torch. **Key people** Dr John Clayton ● Discovered the earliest captured light by burning coal inside an animal's bladder. Sir Joseph Swan ● English physicist and chemist. Invented the first electric light bulb in 1860, which used a glass, vacuum casing and filament, that we recognise in the bulbs of today. His original design was not very practical to power and Thomas Edison further developed this design. Thomas Edison ● American inventor, with a world record number of original invention patents (1,093). Developed the incandescent lamp, improving on Joseph Swan's design almost 20 years later in 1880, which could then be used as part of a circuit to form a practical lighting system. **Curriculum Links** **Science – Electricity** **Experiences**
Year 5	**Mechanical Systems - Bridges** Children will design and create their own bridge to go over the River Thames. **Key people** Norman Foster ● Designer of the London Millennium Footbridge. **Curriculum Links** **Science – Forces** **Experiences**			**Textiles – Stuffed Toy** Children will design and sew their own stuffed toy. **Curriculum Links** **Experiences**		**Cooking & Nutrition – Develop a recipe** Children will plan and execute their own Bolognese recipe. **Curriculum Links** **Experiences**
Year 6	**Electrical Systems – Steady Hand Toy** Children will design and create their own working 'steady hand' toy. **Curriculum Links** **Science - Electricity** **Experiences**			**Digital World – Monitoring devices** Children will design and create their own monitoring device for a purpose. **Curriculum Links** **Experiences**		**Structures - Playgrounds** Children will design and create a structurally sound playground which is environmentally friendly. **Curriculum Links** **Science – Environment** **Experiences**

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Knowledge & Skills (Design, Make, Evaluate, Technical, Additional)

	Cooking & Nutrition	Mechanical Systems	Structures	Textiles	Electrical Systems	Digital World
Reception	**Soup** • Designing a soup recipe as a class. • Designing soup packaging. • Chopping plasticine safely. • Chopping vegetables with support. • Tasting the soup and giving opinions. • Describing some of the following when tasting food: look, feel, smell and taste. • Choosing their favourite packaging design and explaining why • To know that soup is ingredients (usually vegetables and liquid) blended together. • To know that vegetables are grown. • To recognise and name some common vegetables. • To know that different vegetables taste different. • To know that eating vegetables is good for us. • To discuss why different packages might be used for different foods.		**Junk Modelling** • Making verbal plans and material choices. • Developing a junk model. • Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together • Giving a verbal evaluation of their own and others' junk models with adult support. • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model. • To know there are a range to different materials that can be used to make a model and that they are all slightly different. • Making simple suggestions to fix their junk model. Pen Pot ● Thinking about what others might want from a design. ● Beginning to recognise how products and designs in the world around us solve certain needs. ● Considering who they are designing for – identifying the user. ● Stating what they intend to make and why – identifying the purpose. ● Talking about ideas, with purpose and user in mind. ● Talking about existing products when generating ideas. ● Using basic drawing skills to communicate ideas. ● Choosing between a small number of materials, ingredients or components. ● Explaining their choices based on personal experiences.			

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			● Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining) ● Beginning to use objects with a fixed width or length to create even spacing of markings or cuts (e.g. a lolly stick). ● Refining their grip to cut competently and confidently. ● Cutting straight lines and evenly spaced lines. ● Beginning to cut large shapes and thicker materials like card. ● Discussing existing products, saying what they like about them. ● Comparing two products and discuss which is better for a specific purpose. ● Saying what they like about their peers' designs and products. ● Accepting feedback and understanding it is meant to improve their work. different structures are used for different purposes. ● Exploring the features of structures. ● Describing structures as buildings or freestanding structures. ● Making stable structures from card. ● Creating supporting structures to aid stability. ● Using stable objects like cylinders to create structures ● To know that the 'user' is the person who will use the product. ● To know that different users may want different things from a design. ● To know that who they are designing for makes a difference to what they design. ● To know that the purpose is what something is for. ● To know that existing products can help when deciding what to design. ● To know that drawings are a way to explain ideas. ● To know that a plan is deciding what to do first and next. ● To know that different equipment does different things. ● To know the names of common pieces of equipment. ● To know that some products will be better than others. ● To know that their ideas or products can be made better. ● To know that their ideas can makes someone else's work better. ● To know that other people's ideas can help make their work better. ● To know that a structure is something that has been made and put together. ● To know that stable structures do not topple.			

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			● To know that shapes and structures with wide, flat bases or legs are the most stable. ● To know that adding weight to the base of a structure can make it more stable.			
Year 1	**Smoothies** • Designing smoothie carton packaging by-hand. • Learning where and how fruits and vegetables grow. • Chopping fruit and vegetables safely to make a smoothie. • Juicing fruits safely to make a smoothie. • Identifying if a food is a fruit. • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Comparing their own smoothie with someone else's. • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables is any edible part of a plant.	**Moving Slider Aquarium** ● Thinking about what others might want from a design. ● Beginning to recognise how products and designs in the world around us solve certain needs. ● Considering who they are designing for – by identifying the user. ● Stating what they intend to make and why – by identifying the purpose. ● Talking about ideas with purpose and user in mind. ● Talking about existing products when generating ideas. ● Creating mock-ups to communicate designs. ● Planning more than one step ahead. ● Choosing between a small number of materials, ingredients or components. ● Explaining their choices based on personal experiences. ● Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining). ● Explaining in simple terms why certain tools must be handled carefully. ● Following and recalling simple safety instructions. ● Beginning to use objects with a fixed width or length to create even spacing of markings or cuts. (e.g. a lolly stick). ● Refining their grip to cut competently and confidently. ● Cutting straight lines and evenly spaced lines. ● Beginning to cut large shapes and thicker materials like card. ● Puncturing holes. ● Applying masking tape to fix something in place or join to edges. ● Using tools, like scissors, to create shapes. ● Beginning to cut large shapes and thicker materials like card. ● Discussing existing products, saying what they like about them. ● Discussing how their products could be improved based on personal preferences. ● Saying what they like about their peers' designs and products. ● Accepting feedback and understanding it is meant to improve their work. ● Recognising and exploring everyday objects that have mechanisms.		**Puppets** • 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. • 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.		

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		● Recognising everyday objects that use a slider mechanism (eg. drawers, sliding doors, paper trimmer). ● To know that the 'user' is the person who will use the product. ● To know that different users may want different things from a design. ● To know that designers usually design and make something to solve a problem. ● To know that who they are designing for makes a difference to what they design. ● To know that the purpose is what something is for. ● To know that a mock-up is a model of how something works. ● To know that choosing different materials or components will have an effect on what their product does or looks like. ● To know that different equipment does different things. ● To know the names of common pieces of equipment. ● To know that some tools are sharp like scissors and knives. ● To know that following instructions helps with safety. ● To know that cutting in a straight line can be helpful when making. ● To know that some products will be better than others. ● To know that their ideas or products can be made better. ● To know that many things that move have parts inside to help them work. ● To know that mechanisms usually limit unwanted movement. ● To know that a slider mechanism moves an object in a straight line (eg. left/right, up/down). ● To know that sliding mechanisms are designed to keep movement in one direction (eg. using guides/rails etc).				
Year 2		**Fairground Wheel** ● Conducting simple surveys or discussions to gather opinions on what others need or like in a design. ● Knowing that a survey is used to find out what people like. ● Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. ● Knowing that a design brief helps to decide what to make. ● Knowing that design criteria are the steps for making a product successful. ● Creating ideas with design criteria in mind.	**Baby Bear's Chair** • 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 own structures.	**Cushion** • Designing and making a template from an existing cushion and applying individual design criteria. • Following design criteria to create a cushion. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with stuffing and sewing the edges.		

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		● Referring to specific parts of existing products when generating ideas. ● Knowing that the design criteria help when thinking of ideas. ● Using labels to explain parts of a design, label materials, etc. ● Using labels to explain parts of a design, label materials, etc. ● Knowing that drawings can help explain how something works. ● Knowing that a label explains part of a drawing. ● Choosing materials, ingredients or components from a wider range of materials, ingredients or components. ● Explaining their choices based on the properties of materials and components. ● Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc. ● Following and recalling simple safety instructions. ● Knowing that some tools are sharp like scissors and knives. ● Choosing known geometric shapes when making. ● Beginning to shape objects to improve how they work. ● Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere. ● Considering balance in their finishing, like evenly spaced decoration. ● Discussing a range of existing products and saying what they like and dislike about them. ● Evaluating existing products against design criteria. ● Evaluating their ideas and creations against simple design criteria. ● Knowing that design criteria help to decide if their product is a success. ● Suggesting improvements to their peers' designs and products. ● Knowing that improve means to make something better. ● Knowing that their suggestions can improve someone else's work. ● To know everyday objects have mechanisms. ● To know many things that move have parts inside to help them work. ● To know mechanisms usually limit unwanted movement. ● To know everyday objects utilise wheels and axles. ● To know wheels must be able to turn to work effectively. ● To know axles allow wheels to turn without falling off.	• Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. • 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 natural structures are those found in nature. • To know that man-made structures are those made by people.	• Evaluating an end product and thinking of other ways in which to create similar items. •To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. •To know that when two edges of fabric have been joined together it is called a seam. •To know that it is important to leave space on the fabric for the seam. •To understand that some products are turned inside out after sewing so the stitching is hidden.		

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		• To know the features of a fairground wheel include the wheel, frame, pods, a base an axle and an axle holder.				
Year 3	**Adapting a recipe** • Designing a biscuit within a given budget. • Conducting market research. • Following a baking recipe. • Understanding safety and hygiene rules. • Adapting a recipe. • Evaluating an adapted recipe. • Evaluating and comparing a range of products. • Suggesting modifications. • To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that safety and hygiene are important when cooking. • To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping. •To know the importance of budgeting while planning ingredients for a recipe. • To know that products often have a target audience.	**Pneumatic Toys** • Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly. • Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving. • Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client. • To understand how pneumatic systems work. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by drawing in, releasing and compressing air. • To understand how sketches, drawings and diagrams can be used to communicate design ideas. • To know that exploded-diagrams are used to show how different parts of a product fit together. • To know that thumbnail sketches are small drawings to get ideas down on paper quickly.				**Wearable technology** • Problem solving by suggesting which features on a Micro:bit might be useful and justifying my ideas. • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. • Developing design ideas through annotated sketches to create a product concept. • Developing design criteria to respond to a design brief. • Following a list of design requirements. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm. • Analysing and evaluating wearable technology. • Using feedback from peers to improve design. • To understand that, in programming, a 'loop' is code that repeats something again and again until stopped. • To know that a Micro:bit is a pocket-sized, codeable computer. • To know that a simulator is able to replicate the functions of an existing piece of technology. •To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'. • To know what a focus group is by taking part in one.
Year 4			**Castle** • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features -materials needed and colours. • Designing and/or decorating a castle tower on CAD software.	**Fastenings** • Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve. • Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric.	**Torches** • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. • Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials.	

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			• Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs. • To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. • To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product.	• Working neatly by sewing small, straight stitches. • Incorporating a fastening to a design. • Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement. • Articulating the advantages and disadvantages of different fastening types. • To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. • To know that different fastening types are useful for different purposes. • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.	• Assembling a torch according to the design and success criteria. • Evaluating electrical products. • Testing and evaluating the success of a final product. • To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit. • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.	
Year 5	**Developing a recipe** • Researching existing recipes. • Suggesting alternative ingredients. • Designing a jar label. • Writing an alternative recipe. • Understanding cross-contamination. • Using preparation skills. • Making a developed recipe. • Explaining the farm to fork process. • Analysing nutritional content. • To know that beef comes from cows reared on farms. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that nutritional information is found on food packaging. • To know that coloured chopping boards can prevent cross-contamination. • To know that food packaging serves many purposes.		**Bridges** • Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation. • Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support a load. • Building a wooden bridge structure. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks. • Using the correct techniques to saws safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriating materials is an important part of the design process. • Understanding basic wood functional properties. • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others.	**Stuffed Toy** • Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. • Creating a 3D stuffed toy from a 2D design. • Measuring, marking and cutting fabric accurately and independently . • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. • Using appliqué to attach pieces of fabric decoration. • Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular. • Testing and evaluating an end product and giving point for further improvements. • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches		

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			• To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood. • To understand the difference between arch, beam, truss and suspension bridges. • To understand how to carry and use a saw safely.	which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.		
Year 6			**Playgrounds** • Designing a playground featuring a variety of different structures, giving careful 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. • 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.		**Steady Hand Game** • 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 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. • To know that batteries contain acid, which can be dangerous if they leak. • To know the names of the components in a basic series circuit, including a buzzer. •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	**Monitoring devices** • Researching (books, internet) for a particular (user's) animal's needs. • Developing design criteria based on research. • Generating multiple housing ideas using building bricks. • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD. • Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range. • Stating an event or fact from the last 100 years of plastic history. • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. • Explaining key functions in my program (audible alert, visuals). • Explaining how my product would be useful for an animal carer including programmed features. • To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. • To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. • To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.

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					product must be designed primarily with the function in mind. • To understand the diagram perspectives 'top view', 'side view' and 'back'	• To understand key developments in thermometer history. • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. • To know the 6Rs of sustainability. • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.