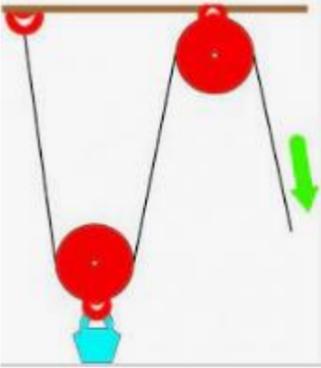
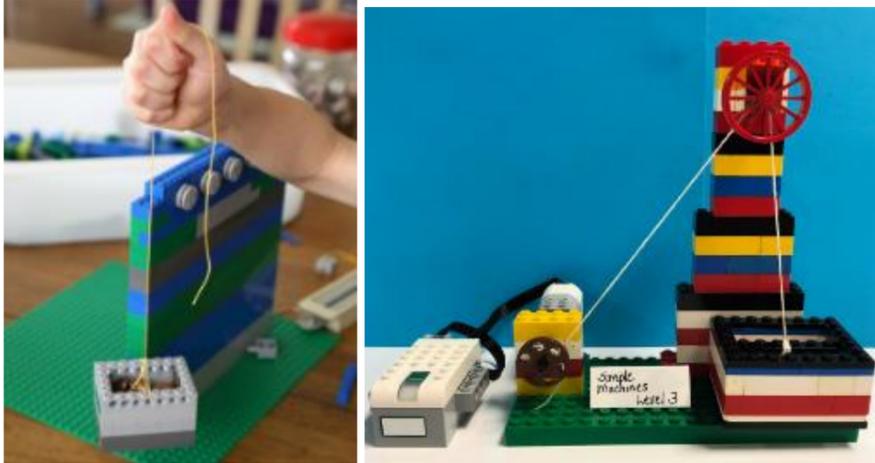
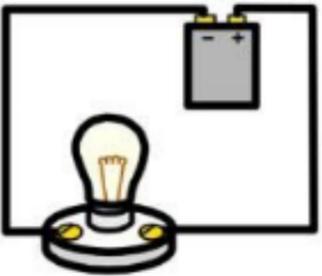


DT Unit of Work
Year 5 Autumn - Mechanisms

Unit	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Final piece: Mechanism Pulleys, Leavers & Gears</p> 	<ul style="list-style-type: none"> • Experience of axles, axle holders and wheels that are fixed or free moving. • Basic understanding of electrical circuits, simple switches and components. • Experience of cutting and joining techniques with a range of materials • An understanding of how to strengthen and stiffen structures. 	<p><u>Design</u></p> <ul style="list-style-type: none"> • Generate innovative ideas by carrying out research. • Develop a simple design specification to guide their thinking. • Develop and communicate ideas through discussion, annotated drawings and drawings from different views. <p><u>Make</u></p> <ul style="list-style-type: none"> • Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans. • Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • 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. • Investigate famous manufacturing and engineering companies relevant to the project 	
<p>National Curriculum Subject Content:</p>	<p><u>Key stage 2</u> Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:</p> <p><u>Design</u></p> <ul style="list-style-type: none"> - 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 <p><u>Make</u></p> <ul style="list-style-type: none"> - 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 <p><u>Evaluate</u></p> <ul style="list-style-type: none"> - investigate and analyse a range of existing products - 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 shape the world <p><u>Technical knowledge</u></p> <ul style="list-style-type: none"> - 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 [for example, series circuits incorporating switches, bulbs, buzzers and motors] - apply their understanding of computing to program, monitor and control their products. 		
<p>Design Knowledge:</p>	<ul style="list-style-type: none"> • Understand that mechanical and electrical systems have an input, process and an output. • Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement. • Know and use technical vocabulary relevant to the project. 		
<p>Knowledge Sequence:</p>		<p>Key Vocabulary</p>	
<p>Intended Knowledge Substantive</p>	<p>Lesson 1 – Evaluate LC: I can evaluate different types of products containing pulleys, leavers & gears</p> <p>Lesson 2 – Explore LC: I can identify different types of pulleys, leavers & gears</p> <p>Lesson 3 – Develop Skills LC: I can create a model showing a variety of pulleys, leavers & gears</p> <p>Lesson 4 – Design LC: I can design a model containing pulleys, leavers & gears</p>		<p><u>Mechanisms</u> pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output, design decisions, functionality, innovation, authentic,</p>

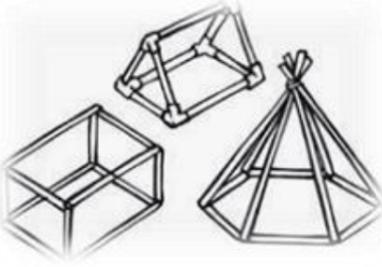
	<p>Lesson 5 – Create Final Piece LC: I can create a final piece</p> <p>Lesson 6 – Evaluate I can evaluate my final piece</p>	user, purpose, design specification, design brief
Assessment Outcomes	<ul style="list-style-type: none"> • Make a product which moves • Develop my own ideas and design a simple plan through drawings and discussion with others before making. • Select and use appropriate tools safely, explaining their choices. • Select and use tools, explaining their choices. • Describe how something works • Understand that different mechanisms produce different types of movement. • Explore and evaluate the use of wheels and axles. • Generate ideas and make a plan based on simple design criteria 	
Significant people/places	<ul style="list-style-type: none"> • James Hargreaves invented the Spinning Jenny (industrialisation of textile engineering) 	
Resources	<p>https://www.youtube.com/watch?v=JnYVz1TSmBQ – How pulleys, leavers and gears work</p> <p>https://www.youtube.com/watch?v=IOsXlsc3ljo – pulleys BBC Teach</p>	
Examples of work		
Examples Final Piece		

DT Unit of Work
Year 5 Spring- Electrical Systems

Unit Electrical Systems	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Final piece: Electrical Systems Complex circuits/ switches Electronic greeting card</p> 	<ul style="list-style-type: none"> • Understand characteristics of a series circuit. • Experience of creating a battery powered electrical product. • Experience of using computer control software and an interface box or a standalone box 	<ul style="list-style-type: none"> • <u>Design</u> • Use research to develop a design specification for a functional product • Generate and develop innovative ideas and share and clarify these through discussion. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. • <u>Make</u> • Formulate a step-by-step plan to guide making. • Competently select and connect electrical components to produce a reliable, functional product. • Create and modify a computer control program • <u>Evaluate</u> • Modify the working features of the product to match the initial design specification. • Demonstrate effectiveness for the intended user and purpose. • Investigate famous inventors who developed ground-breaking electrical systems and components. 	<p>When carrying out a risk assessment for this activity, teachers will need to consider the materials, tools and equipment being used.</p> <p>In addition, the following points should be noted:</p> <ul style="list-style-type: none"> • explain to children that they should not experiment with mains electricity. • rechargeable batteries shouldn't be used for home-made circuits – in the event of a short circuit they could get very hot and may cause injury. • care should be taken when using wire strippers and cutters as they have sharp edges.
<p>National Curriculum Subject Content:</p>	<p>Key stage 2 Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:</p> <p>Design</p> <ul style="list-style-type: none"> - 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 <p>Make</p> <ul style="list-style-type: none"> - 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 <p>Evaluate</p> <ul style="list-style-type: none"> - investigate and analyse a range of existing products - 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 shape the world <p>Technical knowledge</p> <ul style="list-style-type: none"> - 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 [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products. 		
<p>Design Knowledge:</p>	<ul style="list-style-type: none"> • Understand and use electrical systems in their products. • Apply their understanding of computing to program, monitor and control their products. • Know and use technical vocabulary relevant to the project. 		
<p>Knowledge Sequence:</p>		<p>Key Vocabulary</p>	
<p>Intended Knowledge Substantive</p>	<p>Lesson 1 - Technical knowledge LC: I can understand and use electrical systems in my products - Check the children's prior knowledge of electrical systems revisiting symbols and what makes a successful circuit</p> <p>Lesson 2 – Technical Knowledge LC: I understand how to use electrical systems - Create simple small circuits that can fit paper—suitable for greetings cards</p> <p>Lesson 3 - Design LC: I can create a mood board to design an electronic birthday card. -generate and develop ideas using pattern pieces and computer aided design.</p> <p>Lesson 4 - Make</p>		<p><u>Electrical Systems</u> light emitting diodes (LEDs), micro switches, reed switches and magnets, light dependent resistors (LDRs), automatic computer control software and interface boxes or standalone boxes,</p>

	<p>LC: I can make an electronic birthday card. -Join and combine a range of materials competently. I understand and use electrical systems in my products. -Photographs for evidence</p> <p>Lesson 5 - Evaluate LC: I can evaluate appearance and function against original criteria. -Children to evaluate their electronic cards in DT books.</p>	
Assessment Outcomes	<ul style="list-style-type: none"> • Evaluate appearance and function against original criteria • Competently select accurately assemble materials, and securely connect electrical components to produce a reliable, functional product • Formulate detailed step by step plans. • Generate innovative ideas by carrying out research from different sources. 	
Significant people/places	<ul style="list-style-type: none"> • Isaac Newton- gravity • Monica Maurice- safety Lamp 	
Resources		
Examples of work		
Examples Final Piece		

DT Unit of Work
Year 5 Summer – Food & Structures

Unit Food & Structures	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Final piece: Food - Celebrating culture & seasonality To make a dish celebrating a different culture to your own</p> 	<ul style="list-style-type: none"> • Have knowledge and understanding about food • hygiene, nutrition, healthy eating • Be able to use appropriate equipment and utensils, apply a range of techniques for measuring, preparing and combining ingredients. 	<p><u>Design</u></p> <ul style="list-style-type: none"> • Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria • 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 ICT as appropriate to develop and communicate ideas. <p><u>Make</u></p> <ul style="list-style-type: none"> • Write a step-by-step recipe, including a list of ingredients, equipment and utensils • Select and use appropriate utensils and equipment to measure and combine ingredients. • Make, decorate and present the food product for the intended user and purpose. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Carry out sensory evaluations of a range of products and ingredients. Record using tables /graphs /charts • Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. 	
<p>Final piece: Frame Structures (Market Place)</p> 	<ul style="list-style-type: none"> • Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques • Basic understanding of what structures are and how they can be made stronger, stiffer and more stable. 	<p><u>Design</u></p> <ul style="list-style-type: none"> • Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. • Develop a simple design specification to guide their ideas and products, taking account of constraints including time, resources and cost. • Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. <p><u>Make</u></p> <ul style="list-style-type: none"> • Formulate a clear plan, including a step-by-step list • Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join • Use finishing and decorative techniques suitable for the product they are designing and making. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Investigate and evaluate a range of existing frame structures. • Critically evaluate their products against their design specification, intended user and purpose, and carrying out appropriate tests. • Research key events and individuals relevant to frame structures. 	
<p>National Curriculum Subject Content:</p>	<p>Key stage 2 Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:</p> <p><u>Design</u></p> <ul style="list-style-type: none"> - 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 		

	<p>Make</p> <ul style="list-style-type: none"> - 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 <p>Evaluate</p> <ul style="list-style-type: none"> - investigate and analyse a range of existing products - 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 shape the world <p>Technical knowledge</p> <ul style="list-style-type: none"> - 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 [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products. <p><u>Cooking and nutrition</u></p> <p>As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.</p> <p>Pupils should be taught to:</p> <p>Key stage 2</p> <ul style="list-style-type: none"> - 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 understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed. 	
Design Knowledge Food:	<ul style="list-style-type: none"> • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary. 	
Design Knowledge Structures:	<ul style="list-style-type: none"> • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project. 	
Knowledge Sequence:		Key Vocabulary
Intended Knowledge Substantive Food	<p>Lesson 1 – Explore</p> <p>LC: I can identify what makes up a balanced diet</p> <ul style="list-style-type: none"> - Healthy Eating: An introduction for children aged 5-11 videos - Follow on videos discuss different food groups: <ul style="list-style-type: none"> - Foods we need to eat less often -Starchy Carbohydrates -Protein -Fruit & Vegetables -Dairy <p>Lesson 2 – Evaluate</p> <p>LC: I can evaluate a variety of fruit/vegetable snacks</p> <ul style="list-style-type: none"> - Sort food groups - discuss choices <p>Lesson 3 – Develop Skills</p> <p>LC: I can explore healthy choices through my senses</p> <ul style="list-style-type: none"> - Children taste a variety of healthy choices and discuss what they would like in their final product - Discuss including a range of foods including treats and the importance of a balanced diet <p>Lesson 4 – Design</p> <p>LC: I can designed a healthy snack</p> <p>Lesson 5 – Create Final Piece</p> <p>LC: I can make a healthy snack</p> <p>Lesson 6 – Evaluate</p> <p>LC: I can evaluate my healthy snack</p>	<p><u>Food</u></p> <p>ingredients ,unleavened, spice, herbs, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality, utensils, fold, combine, knead, stir, pour, mix, beat, rubbing in, whisk</p>
Assessment Outcomes	<ul style="list-style-type: none"> • 	
Significant people/places	<ul style="list-style-type: none"> • Emily Warren Roebling- engineer- construction of the Brooklyn Bridge • Isambard Kingdom Brunel- Clifton suspension bridge • Thomas Farnolls Pritchard- first iron bridge 	
Resources	<p>Healthy Eating: An introduction for children aged 5-11 https://www.youtube.com/watch?v=mMHVEFWNLMc</p>	

Examples of work		
Examples Final Piece		