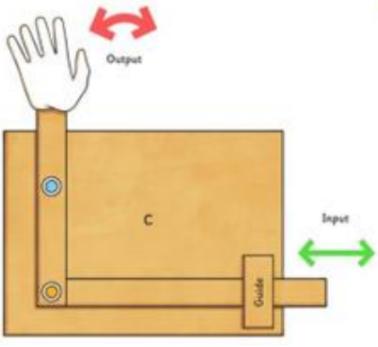


DT Unit of Work
Year 3&4 Autumn - Mechanisms

Unit	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Final piece: Mechanism Leavers and Linkages Christmas Card</p> 	<ul style="list-style-type: none"> • Explored and used mechanisms such as flaps, sliders and levers. • Gained experience of basic cutting, joining and finishing techniques with paper and card. 	<p><u>Design</u></p> <ul style="list-style-type: none"> • Generate 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. <p><u>Make</u></p> <ul style="list-style-type: none"> • Order the main stages of making. • Use tools with some accuracy to cut, shape and join paper and card. • Use finishing techniques suitable for the product they are creating. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. 	
<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 and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • 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 Christmas cards</p> <p>Lesson 2 – Explore LC: I can identify different sliders and leavers</p> <p>Lesson 3 – Develop Skills LC: I can create a model lever with a partner - Children to problem solve</p> <p>Lesson 4 – Design LC: I can design a Christmas card</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>		<p><u>Mechanisms</u> mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating, user, purpose, function prototype, design criteria, innovative, appealing, design brief</p>
<p>Assessment Outcomes</p>	<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.
- Generate ideas and make a plan based on simple design criteria

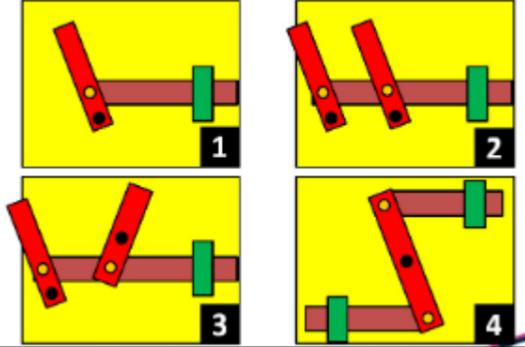
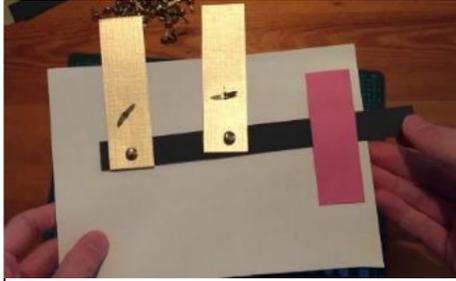
Significant people/places

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Resources

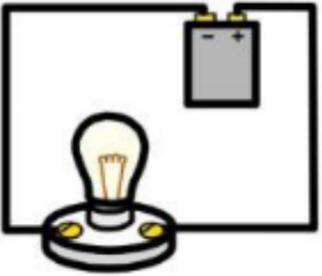
<https://www.youtube.com/watch?v=SinLvPGySmQ> - Levers and Linkages how to?
<https://www.youtube.com/watch?v=1kC4uX2BoDw> – Levers and Linkages how to?

Examples of work



Examples Final Piece

DT Unit of Work
Year 3&4 Spring- Electrical Systems

Unit Electrical Systems	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Final piece: Battery Operated Lights</p>  <p>Electrical Systems Complex circuits/ switches</p>	<ul style="list-style-type: none"> Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. Cut and joined a variety of construction materials, such as wood, card, plastic, glue and reclaimed materials 	<p><u>Design</u></p> <ul style="list-style-type: none"> 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 annotated sketches <p><u>Make</u></p> <ul style="list-style-type: none"> Order the main stages of making. Select from and use tools and equipment to cut, shape, join and finish Select from and use materials and components <p><u>Evaluate</u></p> <ul style="list-style-type: none"> Investigate and analyse a range of existing battery-powered products. Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. 	<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.
<ul style="list-style-type: none"> National Curriculum Subject Content: Follow a step by step plan choosing the right equipment, tools and materials safely 	<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><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 and use electrical systems in their products. Apply their understanding of computing to program 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 – Our Changing Technologies LC: I can explain how key events and individuals in design and technology have helped shape the world. -Understand how key events and individuals in design and technology have helped shape the world in the context of looking at technological developments in the way we light our homes.</p> <p>Lesson 2 – Electrical Systems LC: I can make and represent different types of circuits. -Understand and use electrical systems in their products (for example, series circuits, incorporating switches, and bulbs) in the context of understanding how a series and parallel circuit can be used to light a bulb.</p> <p>Lesson 3 – Switches</p>		<p><u>Electrical Systems</u> series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, wire, battery holder, bulb, bulb holder, insulator, conductor, crocodile clip, control, program, system, input</p>

	<p>LC: I can make and use switches. -Understand and use electrical systems in their products (for example, incorporating switches) in the context of understanding how switches can be made and used in circuits</p> <p>Lesson 4 - Designing LC: I can develop design criteria and a design. -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 in the context of developing design criteria for a light LC: I can develop and communicate a design for my light. Generate, develop, model and communicate their ideas through annotated sketches and cross sectional in the context of sketching a design for a light.</p> <p>Lesson 5 – Making the light LC: I can select materials and components to make my light. -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 in the context of choosing materials and components to make the main structure of the light</p> <p>Lesson 6 – Finishing and Evaluating LC: I can create a well finished product. 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 in the context of selecting materials and components which will create a well finished light. LC: I can complete a detailed evaluation of my finished product. Evaluate their ideas and products against design criteria and consider the views of others to improve their work in the context of evaluating a battery operated light.</p>	
<p>Assessment Outcomes</p>	<ul style="list-style-type: none"> • Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work • Make a product which uses both electrical systems and mechanical components • Investigate and analyse existing products and develop design criteria through discussion, diagrams and sketches 	
<p>Significant people/places</p>	<ul style="list-style-type: none"> • David Misell(English) invented the first flashlight 	
<p>Resources</p>		
<p>Examples of Final Piece</p>		

DT Unit of Work
Year 3&4 Summer – Food & Structures

Unit Food & Structures	Prior learning (Retrieval)	Future learning	Common Misconceptions
<p>Final piece: fruit/vegetable kebab Food Healthy and Varied Diet</p> 	<ul style="list-style-type: none"> • Know some ways to prepare ingredients safely hygienically. • Have some basic knowledge and understanding about healthy eating. • Have used some equipment and utensils and prepared and combined ingredients to make a product. 	<p><u>Design</u></p> <ul style="list-style-type: none"> • Generate and clarify ideas through discussion with peers and adults to develop design criteria for a user and purpose. • Use annotated sketches and appropriate ICT, such as web-based recipes, to develop and communicate ideas. <p><u>Make</u></p> <ul style="list-style-type: none"> • Plan the main stages of a recipe, listing ingredients, utensils and equipment. • Select and use appropriate utensils and equipment to prepare and combine ingredients. • Select from a range of ingredients to make appropriate food products. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • 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. 	
<p>Final piece: packaging Shell Structures (Market Place)</p> 	<ul style="list-style-type: none"> • Experience of using different joining, cutting and finishing techniques with paper and card. • A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science. 	<p><u>Design</u></p> <ul style="list-style-type: none"> • Generate ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. <p><u>Make</u></p> <ul style="list-style-type: none"> • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating. <p><u>Evaluate</u></p> <ul style="list-style-type: none"> • Investigate and evaluate a range of existing shell structures • Test and evaluate their own products against design criteria and the intended user and purpose. 	
<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><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 		

	<ul style="list-style-type: none"> - 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"> • 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. • Know and use technical and sensory vocabulary relevant to the project. 	
Design Knowledge Textiles:	<ul style="list-style-type: none"> • 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. • Explore different finishing techniques e.g. using painting, stitching, sequins, buttons and ribbons. • Know and use technical vocabulary relevant to the project. 	
Knowledge Sequence:		Key Vocabulary
Intended Knowledge Substantive Food	<p>Lesson 1 – Explore 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 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 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 LC: I can designed a healthy snack</p> <p>Lesson 5 – Create Final Piece LC: I can make a healthy snack</p> <p>Lesson 6 – Evaluate LC: I can evaluate my healthy snack</p>	
Assessment Outcomes	<ul style="list-style-type: none"> • Use simple utensils and equipment (including measuring) safely • Explore a variety of fruit and vegetables and describe the ingredients I am using. • Evaluate ideas and finished products against design criteria including intended user and purpose. 	
Significant people/places	<ul style="list-style-type: none"> • Clarissa Dickson- British Chef 	
Resources	Healthy Eating: An introduction for children aged 5-11 https://www.youtube.com/watch?v=mMHVEFWNLMc	
Examples of work		
Examples Final Piece		