

<p><b>Year 5 National Curriculum objectives:</b> Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art.</p>	
<p><b>Year 5 Areas of study:</b>  <b>Bridges</b>  <b>Pop Up Book</b></p>	<p><b>Design:</b>          Designing a stable structure that is able to support weight • Creating frame structure with focus on triangulation.          Designing a pop-up book which uses a mixture of structures and mechanisms • Naming each mechanism, input and output accurately • Storyboarding ideas for a book.</p>
<p><b>Make:</b>          Making a range of different shaped beam bridges • Using triangles to create truss bridges that span a given distance and supports 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.          Following a design brief to make a pop up book, neatly and with focus on accuracy • Making mechanisms and/or structures using sliders, pivots and folds to produce movement • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.</p>	<p><b>Evaluate:</b>          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.</p>
<p><b>Technical:</b>          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 their properties • To understand the material (functional and aesthetic) properties of wood.          To know that mechanisms control movement • To understand that mechanisms that can be used to change one kind of motion into another          • To understand how to use sliders, pivots and folds to create paper-based mechanisms.</p>	<p><b>Additional:</b>          • To understand the difference between arch, beam, truss and suspension bridges • To understand how to carry and use a saw safely.          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.</p>

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<p><b>Year 5 Areas of study:</b>  <b>Doodlers</b>  <b>What Could Be Healthier?</b>  <b>Monitoring Devices</b></p>	<p><b>Design:</b> Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product • Developing design criteria based on finding from investigating existing products • Developing design criteria that clarifies the target user. Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients • Writing an amended method for a recipe to incorporate the relevant changes to ingredients • Designing appealing packaging to reflect a recipe. 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 combine one or more 3D objects, using CAD</p>
<p><b>Make:</b> • Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor • Constructing a product with consideration for the design criteria. Cutting and preparing vegetables safely • Using equipment safely, including knives, hot pans and hobs • Knowing how to avoid cross-contamination • Following a step by step method carefully to make a recipe. 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.</p>	<p><b>Evaluate:</b> Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses • Determining which parts of a product affect its function and which parts affect its form • Analysing whether changes in configuration positively or negatively affect a product. Identifying the nutritional differences between different products and recipes • Identifying and describing healthy benefits of food groups. 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.</p>
<p><b>Knowledge:</b> To know that series circuits only have one direction for the electricity to flow • To know when there is a break in a series circuit. • To know that an electric motor converts electrical energy into rotational movement • To know a motorised product is one which uses a motor to function. To understand where meat comes from - learning that beef is from cattle and how beef is reared, processed, including welfare issues • To know that I can adapt a recipe to make it healthier • To know that I can use a nutritional calculator to see how healthy a food option is • To understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods.</p>	<p><b>Knowledge:</b> 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 in programming are a set of rules.  <b>Additional:</b> To know that product analysis is critiquing the strengths and weaknesses of a product • To know that 'configuration' means how the parts of a product are arranged. 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.</p>

