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|  | **Textiles:**  Fastenings (Y4) | **Digital world:**  Monitoring Devices (Y5) |
| **Design** | * Writing design criteria for a product, articulating decisions made. * Designing a personalised book sleeve. | * 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. |
| **Make** | * 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. * Working neatly by sewing small, straight stitches. * Incorporating a fastening to a design. | * 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. |
| **Evaluate** | * 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. | * 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. |
| **Technical** | * 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. | * 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. |
| **Additional** |  | * 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. |

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|  | **Electrical systems:**  Doodlers (Y5) | **Food:**  What Could be healthier (Y5) |
| **Design** | * 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 ﬁndings 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. |
| **Make** | * 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. * Breaking down the construction process into steps so that others can make the product. | * 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. |
| **Evaluate** | * 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 an existing product. * Peer evaluating a set of instructions to build a product. | * Identifying the nutritional differences between different products and recipes. * Identifying and describing healthy beneﬁts of food groups. |
| **Technical** | * 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, all components turn off. * To know that an electric motor converts electrical energy into rotational movement, causing the motor’s axle to spin. * 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 and processed, including key welfare issues. * To know that I can adapt a recipe to make it healthier by substituting ingredients. * To know that I can use a nutritional calculator to see how healthy a food option is. * To understand that ‘cross-contamination’ means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. |
| **Additional** | * 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. |  |

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|  | **Structures:**  Bridges (Y5) | **Mechanical Systems:**  Making a Pop-up Book (Y5) |
| **Design** | * Designing a stable structure that is able to support weight. * Creating a frame structure with a 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. |
| **Make** | * 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. | * 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. |
| **Evaluate** | * 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. | * Evaluating the work of others and receiving feedback on own work. * Suggesting points for improvement. |
| **Technical** | * 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 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 sliders, pivots and folds to create paper-based mechanisms. |
| **Additional** | * 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. |