|  |  |  |
| --- | --- | --- |
|  | **Structures: Constructing a Castle (Y3)** | **Mechanical Systems:  Pneumatic Toys (Y3)** |
| **Design** | * 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. | * 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. |
| **Make** | * Constructing a range of 3D geometric shapes using nets . * Creating special features for individual designs. * Making facades from a range of recycled materials. | * 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. |
| **Evaluate** | * 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. | * 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. |
| **Technical** | * To understand that wide and ﬂat based objects are more stable. * To understand the importance of strength and stiffness in structures. | * 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. |
| **Additional** | * 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. | * 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. |

|  |  |  |
| --- | --- | --- |
|  | **Electrical Systems:  Electric Poster (Y3)** | **Food:  Eating Seasonally (Y3)** |
| **Design** | * Carry out research based on a given topic (e.g. The Romans) to develop a range of initial ideas. * Generate a ﬁnal design for the electric poster with consideration to the client’s needs and design criteria. * Design an electric poster that ﬁts the requirements of a given brief. * Plan the positioning of the bulb (circuit component) and its purpose. | * Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. |
| **Make** | * Create a ﬁnal design for the electric poster. * Mount the poster onto corrugated card to improve its strength and allow it to withstand the weight of the circuit on the rear. * Measure and mark materials out using a template or ruler. * Fit an electrical component (bulb). * Learn ways to give the ﬁnal product a higher quality ﬁnish (e.g. framing to conceal a roughly cut edge). | * Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. * Following the instructions within a recipe. |
| **Evaluate** | * Learning to give and accept constructive criticism on own work and the work of others. * Testing the success of initial ideas against the design criteria and justifying opinions. * Revisiting the requirements of the client to review developing design ideas and check that they fulﬁl their needs. | * Establishing and using design criteria to help test and review dishes. * Describing the beneﬁts of seasonal fruits and vegetables and the impact on the environment. * Suggesting points for improvement when making a seasonal tart. |
| **Technical** | * To understand that an electrical system is a group of parts (components) that work together to transport electricity around a circuit. * To understand common features of an electric product (switch, battery or plug, dials, buttons etc.). * To list examples of common electric products (kettle, remote control etc.). * To understand that an electric product uses an electrical system to work (function). * To know the name and appearance of a bulb, battery, battery holder and crocodile wire to build simple circuits. | * To know that not all fruits and vegetables can be grown in the UK. * To know that climate affects food growth. * To know that vegetables and fruit grow in certain seasons. * To know that cooking instructions are known as a ‘recipe’. * To know that imported food is food which has been brought into the country. * To know that exported food is food which has been sent to another country.. * To understand that imported foods travel from far away and this can negatively impact the environment. * To know that each fruit and vegetable gives us nutritional beneﬁts because they contain vitamins, minerals and ﬁbre. * To understand that vitamins, minerals and ﬁbre are important for energy, growth and maintaining health. * To know safety rules for using, storing and cleaning a knife safely. * To know that similar coloured fruits and vegetables often have similar nutritional beneﬁts. |
| **Additional** | * To understand the importance and purpose of information design. * To understand how material choices (such as mounting paper to corrugated card) can improve a product to serve its purpose (remain rigid without bending when the electrical circuit is attached). | * Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish. |

|  |  |  |
| --- | --- | --- |
|  | **Textiles:  Cross Stitch & Applique (Y3)** | **Digital World: Electronic Charm (Y3)** |
| **Design** | * Designing and making a template from an existing cushion and applying individual design criteria. | * Problem solving by suggesting potential features on a Micro: bit and justifying my ideas. * Developing design ideas for a technology pouch. * Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. |
| **Make** | * Following design criteria to create a cushion or Egyptian collar. * 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 (Cushions) ***or*** * embellishing the collars based on design ideas (Egyptian collars). | * Using a template when cutting and assembling the pouch. * Following a list of design requirements. * Selecting and using the appropriate tools and equipment for cutting, joining, shaping and decorating a foam pouch. * Applying functional features such as using foam to create soft buttons. * Writing a program to control (button press) and/or monitor (sense light) that will initiate a ﬂashing LED algorithm. |
| **Evaluate** | * Evaluating an end product and thinking of other ways in which to create similar items. | * Analysing and evaluating an existing product. * Identifying the key features of a pouch. |
| **Technical** | * 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. | * 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. |
| **Additional** |  | * To know what the ‘Digital Revolution’ is and features of some of the products that have evolved as a result. * To know that in Design and technology the term ‘smart’ means a programmed product. * To know the difference between analogue and digital technologies. * To understand what is meant by ‘point of sale display.’ * To know that CAD stands for ‘Computer-aided design’. |