Design and Technology Curriculum: Year 3

What are the aims and intentions of this curriculum?

That by the end of KS2, children:

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
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- 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

Evaluate

- 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

Technical knowledge

- 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

Cooking and Nutrition

- 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.

Term	**Topic**	**Knowledge** **Technical Knowledge*	**Skills** **Design *Make *Evaluate*	**Vocabulary**

Design and Technology Curriculum: Year 3

1	**Textiles: Cushions**	To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric 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	Designing and making a template from an existing cushion and applying individual design criteria Following design criteria to create a cushion 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 Evaluating an end product and thinking of other ways in which to create similar items	Accurate, Applique, Cross-stitch, Cushion, Decorate, Detail, Fabric, Patch, Running-stitch, Seam, Stencil, Stuffing, Target audience, Target customer, Template
2	**Structures: Constructing a castle**	To understand that wide and flat based objects are more stable To understand the importance of strength and stiffness in structures 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	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 Constructing a range of 3D geometric shapes using nets Creating special features for individual designs Making facades from a range of recycled materials Evaluating own work and the work of others based on the aesthetic of the finished product in comparison to the original design Suggesting points for modification of the individual designs	2D shapes, 3D shapes, Castle, Design criteria, Evaluate, Façade, Feature, Flag, Net, Recyclable, Scoring, Stable, Strong, Structure, Tab, Weak
3	**Food: Eating seasonally**	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	Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish	Climate, Dry climate, Exported, Imported, Mediterranean climate, Nationality,

		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	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 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	Nutrients, Polar climate, Recipe, Seasonal food, Seasons, Temperate climate, Tropical climate, Food contamination Work space Safety
4	**Digital world: Electronic charms**	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 Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm 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	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 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 Analysing and evaluating an existing product Identifying the key features of a pouch	Analogue, Badge, CAD, Control, Design requirements, Develop, Digital, Digital revolution, Digital world, Display, Electronic, Electronic products, Fasten, Feature, Function, Initiate, Key features, Layers, Loops, Micro: bit, Monitor, Net, Point of sale, Product,

		To understand what is meant by 'point of sale display' To know that CAD stands for Computer-aided Design		Product design, Program, Sense, Simulator, Smart wearables, Stand, Technology, Template, Test, User
5	**Mechanical system: Pneumatic toys**	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 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	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 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, weaving 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	Exploded-diagram, Function, Input, Lever, Linkage, Mechanism, Motion, Net, Output, Pivot, Pneumatic system, Thumbnail sketch, Design brief, Design criteria