Design & Technology Overview

Our Design & Technology Learning Challenges are based on the D&T Association's Projects on a Page themes, with pupils' skills and knowledge being developed across six key areas: **structures, mechanisms, electrical systems, cooking and nutrition, digital world and textiles**. Units can be taught within any order within the year group, as progression builds upon learning from the previous year. Some **digital world** units will be covered during Computing sessions. Units can be taught in any order and teachers are encouraged to adapt their projects to include as many cross curricular opportunities as possible. All D&T units should consider **who** and **why.**

Year 3

Textiles: Cross-stitch and appliqué	Structures: Constructing a castle	Mechanical systems: Pneumatic toys	Digital world: Wearable technology
Introduce two new skills to add to the pupils' repertoire: cross stitch and appliqué. Pupils apply their knowledge to the design, decoration and assembly of their own bookmark.	Learning about the features of a castle, pupils design and make one of their own. They will also be using configurations of handmade nets and recycled materials to make towers and turrets before constructing a stable base. Linked to George and the Dragon.	Design and create a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts. Pupil are introduced to thumbnail sketches and exploded diagrams.	Design, code and promote a piece of wearable technology to use in low light conditions, developing their understanding of programming to monitor and control products to solve a design scenario.

Year 4

Electrical systems: Light up question boxes	Structure: Pavilions	Cooking and nutrition: Adapting a recipe	Textiles: Fastenings
Pupils apply their scientific understanding of electrical circuits to create a a new light up question box that could be part of an interactive display, made from recycled and reclaimed materials and objects. They design and evaluate their product against set design criteria.	Exploring pavilion structures, learning about what they are used for and investigate how to create strong and stable structures before designing and creating their own pavilions, complete with cladding.	Work in groups to adapt a simple biscuit recipe, to create a biscuit suited to a chosen target audience. They ensure that their creation comes within a given budget of overheads and ingredients	Building upon their sewing skills from previous years, pupils design and create a money pouch; exploring a variety of fastenings and selecting the most appropriate for their design based on strength and appropriate-use

Year 5

Textiles: Stuffed Christmas decorations	Structure: Bridges	Digital world: Monitoring devices	Mechanical systems: Pop-up book
Design a stuffed Christmas decoration and make decisions on materials, decorations and attachments (appendages), after learning how to sew a blanket stitch.	After learning about various types of bridges and exploring how the strength of structures can be affected by the shapes used, create their own bridge and test its durability - using woodworking tools and techniques	Program a Micro: bit animal monitoring device that will alert the owner when the temperature is not optimal. Develop 3D CAD skills by learning how to navigate the Tinkercad interface and essential tools.	Create a four-page pop-up story book design about Eyam, incorporating a range of functional mechanisms that use levers, sliders, layers and spacers to give the illusion of movement through interaction.

Year 6

Cooking and nutrition: Developing a recipe	Structure: Playgrounds	Electrical systems: Steady hand game
Research and modify a traditional bolognese sauce recipe to improve the nutritional value. Cook improved version and create packaging that fits design criteria. Learn about where beef comes from.	Design and create a model for a new playground featuring five apparatus, made from three different structures. Using a footprint as the base, practise visualising objects in plan view and get creative including natural features.	Design and create a steady hand game, use nets to create the bases and apply knowledge of electrical circuits to build an operational circuit with a buzzer that completes the circuit when the handle makes contact with the wire.