DT curriculum in Y3 – Processes

Rationale

Opportunities are provided in Y3 to ensure pupils can use mechanisms in their projects. They will understand the importance of why structure is important and how to strengthen them as needed. To begin to understand a design criteria and how best to meet it will be supported. To see how design can reflect situations and circumstances in real life and why we need to solve a problem through design. Mechanisms will help to meet the criteria.

Prior Knowledge	Learning	Future Learning
In Y2 pupils are taught to: • Design purposeful, appealing products for himself/herself and other users based on design criteria. • Generate, develop, model and communicate his/her ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. • Choose appropriate tools, equipment, techniques and materials from a wide range. • Safely measure, mark out, cut and shape materials and components using a range of tools. • Evaluate and assess existing products and those that he/she has made using a design criteria. • Investigate different techniques for stiffening a variety of materials and explore different methods of enabling structures to remain stable.	**In Y3 pupils are taught to:** • Use knowledge of existing products to design his/her own functional product. • Create designs using annotated sketches, cross-sectional diagrams and simple computer programmes. • Safely measure, mark out, cut, assemble and join with some accuracy. • Make suitable choices from a wider range of tools and unfamiliar materials and plan out the main stages of using them. • Investigate and analyse existing products and those he/she has made, considering a wide range of factors. • Strengthen frames using diagonal struts. • Understand how mechanical systems such as levers and linkages or pneumatic systems create movement.	**In Y4 pupils are taught to:** • Use knowledge of existing products to design a functional and appealing product for a particular purpose and audience. • Create designs using exploded diagrams. • Use techniques which require more accuracy to cut, shape, join and finish his/her work e.g. Cutting internal shapes, slots in frameworks. • Consider how existing products and his/her own finished products might be improved and how well they meet the needs of the intended user. • Apply techniques he/she has learnt to strengthen structures and explore his/her own ideas. • Understand and use electrical systems in products. **In Y5 pupils are taught to:** • Use his/her research into existing products and his/her market research to inform the design of his/her own innovative product. • Create prototypes to show his/her ideas.

Explore and use mechanisms e.g. levers, sliders, wheels and axles in his/her products.		• Make careful and precise measurements so that joins, holes and openings are in exactly the right place. • Produce step by step plans to guide his/her making, demonstrating that he/she can apply his/her knowledge of different materials, tools and techniques. • Make detailed evaluations about existing products and his/her own considering the views of others to improve his/her work. • Build more complex 3D structures and apply his/her knowledge of strengthening techniques to make them stronger or more stable. • Understand how to use more complex mechanical and electrical systems. **In Y6 pupils are taught to:** • Use research he/she has done into famous designers and inventors to inform the design of his/her own innovative products. • Generate, develop, model and communicate his/her ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. • Apply his/her knowledge of materials and techniques to refine and rework his/her product to improve its functional properties and aesthetic qualities. • Use technical knowledge accurate skills to problem solve during the making process.

		• Use his/her knowledge of famous designs to further explain the effectiveness of existing products and products he/she have made. • Use a wide range of methods to strengthen, stiffen and reinforce complex structures and can use them accurately and appropriately. • Apply his/her understanding of computing to program, monitor and control his/her product.
Key Vocabulary *design, template, fabric, annotated sketches, cross-section, diagram* *winding, mechanism, wheels, axles, winder, slider, levers, linkage* *strengthen, structure, stronger, stiffer, stable, rigid* *measure, mark out, cut, assemble, join, diagonal, strut* *mechanical, pneumatic* *design criteria, problem solving*		