Progression Map for Design and Technology

Curriculum Intent

At Pulford School we aim to deliver DT through a thematic based curriculum with appropriate subject knowledge, skills and understanding as set out in the National Curriculum Design Technology Programmes of study. The children are taught to combine their designing and making skills with knowledge and understanding in order to design and make a product. The children will also be introduced to the work of designers and their processes to support their learning. Skills are taught progressively to ensure that all children are able to learn and practice in order to develop as they move through the school. Evaluation is an integral part of the design process and allows children to adapt and improve their product as well as develop an honest and resilient approach to self evaluation. Children will also begin to develop basic knowledge and understanding of cooking, nutrition and related hygiene.

Implementation

We teach the National Curriculum, supported by a clear skills and knowledge progression. This ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children. We have integrated DT opportunities within our topic based curriculum which builds strong links between other areas of learning. All teaching of DT follows the design, make and evaluate cycle. Each stage is rooted in technical knowledge. The design process should be rooted in real life, relevant contexts and clear purpose to give meaning to learning. While making, children will, wherever appropriate, be given choices and a range of tools to choose from. Evaluation is a key element of DT. Children will be taught to evaluate their own products against a design criteria. Each of these steps should be rooted in technical knowledge and vocabulary.

Impact

The impact of the DT curriculum at Pulford School is that we ensure our children progress to middle school with an excellent attitude to learning, both independently or collaboratively. They have the ability to carry out thorough research and questioning, to develop a plan on end users' needs. Pupils will be able to plan and design a product which is fit for purpose, using tools appropriately and safely. They will apply mathematical and scientific knowledge accurately, alongside using their imagination and creativity, to plan a project following a design brief. Pupils will have developed resilience and self awareness to carry out fair evaluations of their work.

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National Curriculum	**EY** **Early Learning Goal** **Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.** **• Share their creations, explaining the process they have used.**	**KS1** **When designing and making, pupils should be taught to:** **Design** **• design purposeful, functional, appealing products for themselves and other users based on design criteria** **• generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology** **Make** **• select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]** **• select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics** **Evaluate** **• explore and evaluate a range of existing products** **evaluate their ideas and products against design criteria** **Technical knowledge** **• build structures, exploring how they can be made stronger, stiffer and more stable** **• explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.**		**KS2** **When designing and making, pupils should be taught to:** **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.**			
	Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Materials	Explore a range of materials, including paper, card, junk modelling, ribbon, wool. Begin to change it to create different effects – folding, cutting.	• Cut materials safely using tools provided. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).	Measure and mark out to nearest cm. • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).	Cut materials accurately and safely by selecting appropriate tools. • Select appropriate joining techniques.	Measure and mark out to the nearest mm. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).	Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).	Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (e.g. the nature of fabric may require sharper scissors than would be used to cut paper).
Textiles		• Shape textiles using templates. • Colour and decorate textiles	Join textiles using running stitch. • Colour and decorate textiles using a number of techniques	Understand the need for a seam allowance. • Join textiles with appropriate stitching.	• Select the most appropriate techniques to decorate textiles	• Create objects (such as a cushion) that employ a seam allowance. • Join textiles with a combination of stitching techniques (e.g. back stitch for seams and running stitch to attach decoration).	Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).

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Electricals & Electronics (SCIENCE – cross curricular links)		Recognise if a battery operated device works or not.	Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).	Create series circuits.	Create parallel circuits.	Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).	Create circuits using electronics kits that employ a number of components with increasing confidence.
Construction	Start to construct with a purpose in mind, using junk and recycled materials and construction kits (Duplo)	Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.	Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).	Choose suitable techniques to construct products or to repair items.	Strengthen materials using suitable techniques.	Develop a range of practical skills to create products (e.g cutting, drilling and screwing, nailing, gluing, filling and sanding).	Develop a range of practical skills to create products.
Mechanics		Create products using levers and wheels.	Create products using winding mechanisms.	Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	Use scientific knowledge to choose appropriate mechanisms for a product.	Convert rotary motion to linear using cams.	Use innovative combinations of electronics (or computing) and mechanics in product designs
Food & Nutrition **National Curriculum**	EY **ELG – PSED – Managing Self** Manage their own basic hygiene…. and understanding the importance of healthy food. **ELG – Physical Development – Fine Motor skills** Use a range of small tools.. including cutlery.	**KS1** **Pupils should be taught to** • **use the basic principles of a healthy and varied diet to prepare dishes** • **understand where food comes from.**		**KS2** **Pupils should be taught to** • **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.**			
Food & Nutrition	Talk about and make healthy food choices for health and oral hygiene. Children recognise where food comes from.	Cut ingredients safely and hygienically. Assemble or cook ingredients.	Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales.	Prepare ingredients hygienically using appropriate utensils. • Measure accurately. • Follow a recipe. • Assemble or cook ingredients	Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram. • Assemble and cook ingredients (controlling the temperature of the oven or hob, if cooking).	• Understand the importance of correct storage and handling of ingredients (knowledge of micro-organisms). • Demonstrate a range of baking and cooking techniques.	• Measure accurately and calculate ratios of ingredients to scale up or down from recipe. • Create and refine recipes, including ingredients, methods, cooking times and temperatures.