

Design and Technology at Bentham CP School



Our Curriculum Aims:

At Bentham CP School, children use their creativity and imagination to design and make products that solve problems in a range of contexts. They draw on the disciplines of other subjects such as: mathematics, science, engineering, computing and art. Children learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. They evaluate notable designers and existing products to inspire them to create their own ideas and designs.

Our Curriculum Drivers:



Our place in our world



Our Voice



Ourselves



Our Ambitions

Characteristics of a Designer

- Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.
 - An excellent attitude to learning and independent working.
 - The ability to use time efficiently and work constructively and productively with others.
 - The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.

- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject and knowledge of, up-to-date technological innovations in materials, products and systems.

Implementation

Our children should be able to organise their knowledge, skills and understanding around the following key learning concepts:



To master practical skills

To design, make, evaluate and improve

To take inspiration from design throughout history

These key learning concepts underpin learning in each milestone. This enables children to reinforce and build upon prior learning, make connections and develop subject specific language.

The vertical accumulation of knowledge and skills from Years 1 to 6 is mapped as follows:

Key Learning Concept	Milestone 1 Years 1 and 2	Milestone 2 Years 3 and 4	Milestone 3 Years 5 and 6
Master Practical Skills: Food	<ul style="list-style-type: none"> • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients. 	<ul style="list-style-type: none"> • Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking) 	<ul style="list-style-type: none"> • Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • Create and refine recipes, including ingredients, methods, cooking times and temperatures
Master Practical Skills: Materials	<ul style="list-style-type: none"> • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen) 	<ul style="list-style-type: none"> • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques. 	<ul style="list-style-type: none"> • 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 (such as the nature of fabric may require sharper scissors than would be used to cut paper).

Master Practical Skills: Textiles	<ul style="list-style-type: none"> Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). 	<ul style="list-style-type: none"> Understand the need for a seam allowance. Join textiles with appropriate stitching. Select the most appropriate techniques to decorate textiles. 	<ul style="list-style-type: none"> Create objects (such as a cushion) that employ a seam allowance. Join textiles with a combination of stitching techniques (such as 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).
Master Practical Skills: Electricals and electronics	<ul style="list-style-type: none"> Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage). 	<ul style="list-style-type: none"> Create series and parallel circuits 	<ul style="list-style-type: none"> Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).
Master Practical Skills: Computing	<ul style="list-style-type: none"> Model designs using software. 	<ul style="list-style-type: none"> Control and monitor models using software designed for this purpose. 	<ul style="list-style-type: none"> Write code to control and monitor models or products.
Master Practical Skills: Construction	<p>Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.</p>	<ul style="list-style-type: none"> Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques. 	<ul style="list-style-type: none"> Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding)
Master	<ul style="list-style-type: none"> Create products using levers, wheels 	<ul style="list-style-type: none"> Use scientific knowledge of the 	<ul style="list-style-type: none"> Convert rotary motion to linear using

Practical Skills: Mechanics	and winding mechanisms.	transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).	cams. <ul style="list-style-type: none"> • Use innovative combinations of electronics (or computing) and mechanics in product designs
Design, make, evaluate and improve	<ul style="list-style-type: none"> • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design. 	<ul style="list-style-type: none"> • Design with purpose by identifying opportunities to design. • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design. • Use software to design and represent product designs. 	<ul style="list-style-type: none"> • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from designs throughout history	<ul style="list-style-type: none"> • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created. 	<ul style="list-style-type: none"> • Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. • Improve upon existing designs, giving reasons for choices. • Disassemble products to understand how they work 	<ul style="list-style-type: none"> • Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.

Aspirations For The Future

Children develop an understanding of how subjects and specific skills are linked to future jobs.

Here are some of the jobs you could aspire to do in the future as a Designer:

- Sound engineer
- Theme park designer
- Videogames studies researcher
- Lego designer
- Den builder
- Jewellery designer

Impact

Assessment

Through the explicit teaching of the Design skills, both the teachers and the children assess their learning continuously throughout the lesson. Throughout and at the end of a unit of work, children will reflect on their learning alongside their peers and their teacher. Our assessment systems enable teachers to make informed judgements about the depth of their learning and the progress they have made over time.

Subject Leader Portfolios will collate evidence of learning across the year. This will include pupil and parent voice, photographs and examples of children's learning both within and beyond the school day.