

Progression of Skills in Design and Technology

| Strands | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Beyond primary expectations |
|--|--|--|---|---|---|--|---|
| Design, make, evaluate and improve | <ul style="list-style-type: none"> Explain what they are making and which materials they are using. Design products that have a clear purpose and an intended user. Use pictures and words to convey what they want to make. Make products, using a range of tools to cut, shape, join and finish. Say what they like and don't like about their product and explain why. Talk about how closely their finished product meets their design criteria. Begin to use software to represent 2D designs. | <ul style="list-style-type: none"> Investigate existing products, including drawing them to analyse and understand how they are made. Plan a sequence of actions to make a product. Develop more than one design. Develop prototypes. Generate designs with annotated sketches and computer-aided design (CAD) where appropriate. Refine work and techniques as work progresses, continually evaluating the product design. Identify strengths and weaknesses of their design ideas. Talk about how closely their finished product meets their design criteria and meets the need of the user. | <ul style="list-style-type: none"> Undertake research to inform design process. This may include surveys and interviews. Use prototypes, cross-sectional diagrams, exploded diagrams and CAD software to represent designs. Consider the views of others when evaluating their own work. Ensure products have a high quality finish, using art skills where appropriate. Justify their decisions about materials and methods of construction. Make suggestions on how their design/product could be improved. | <ul style="list-style-type: none"> Communicate ideas and designs skilfully and accurately in 2D and 3D, using a variety of techniques, including computing. | | | |
| Cooking and nutrition | <ul style="list-style-type: none"> Understand where food comes from. Group familiar food products e.g. fruit and vegetables. Cut ingredients safely. Prepare simple dishes-safely and hygienically-without using a heat source. | <ul style="list-style-type: none"> Group foods into the five groups in The Eatwell Plate. Cut, grate or peel ingredients safely. Prepare simple dishes-safely and hygienically-without using a heat source. Measure or weigh using cups or electronic scales. | <ul style="list-style-type: none"> Cut materials accurately and safely by selecting appropriate tools. Know that a healthy diet is made up from a variety of different food and drink, as depicted in The Eatwell Plate. Measure and weigh ingredients appropriately. Follow a recipe. | <ul style="list-style-type: none"> Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). Measure ingredients using scales. Prepare ingredients hygienically and using the appropriate utensils by following a recipe. | <ul style="list-style-type: none"> Assemble or cook ingredients, controlling the temperature of the oven or hob if cooking. Measure accurately using different equipment. Create recipes, including ingredients, methods, cooking times and temperatures. Understand the importance of correct storage and handling of ingredients. | <ul style="list-style-type: none"> Combine ingredients appropriately e.g. beating or rubbing. Measure ingredients to the nearest gram and millilitre and calculate ratios of ingredients to scale up or down from a recipe. Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed. Create and refine recipes, including ingredients, methods, cooking times and temperatures. | <ul style="list-style-type: none"> Understand the importance of nutrition, a balanced diet and about the characteristics of a broad range of ingredients in choosing and preparing food. |
| Construction, mechanics and electronics | <ul style="list-style-type: none"> Mark out materials to be cut using a template. Attach wheels to chassis using an axle. With support cut strip wood/dowel using a hacksaw. Make vehicles with construction kits which contain free running wheels. | <ul style="list-style-type: none"> Use a range of materials to create models with wheels and axles e.g. tubes, dowel and cotton reels. Use materials to practise drilling, screwing, nailing and gluing to strengthen products. | <ul style="list-style-type: none"> Create series circuits. Strengthen frames using diagonal struts. Begin to use mechanical systems in their products e.g. gears, pulleys and levers. | <ul style="list-style-type: none"> Create series and parallel circuits. Investigate how to make structures more stable e.g by widening the base. Understand and use mechanical structures in their products e.g. gears, pulleys, levers and gears. | <ul style="list-style-type: none"> Control a model using an ICT control model. Use a glue gun with close supervision. Join materials using appropriate methods. Use a hand drill to drill tight and loose fit holes. | <ul style="list-style-type: none"> Create circuits that employ a number of components (such as LEDs, resistors and transistors). Cut wood accurately to 1mm. Build frameworks using a range of materials e.g. wood, card and corrugated plastic. Use a cam to make an up and down mechanism. | <ul style="list-style-type: none"> Develop sophisticated practical skills and carry out diagnostic, repair and maintenance tasks in a range of contexts. Develop well-conceived and well-executed practical solutions. Increase skills, knowledge and competence in using materials, machinery, technique and processes. |
| Materials | <ul style="list-style-type: none"> Fold, tear and cut paper or card. Investigate strengthening sheet materials. Roll paper to create tubes. Demonstrate a range of joining techniques such as gluing or taping. Measure and mark out lines. | <ul style="list-style-type: none"> Demonstrate a range of joining techniques such as gluing, taping or creating hinges. Cut materials safely using tools provided. Demonstrate a range of cutting and shaping techniques such as tearing, cutting, folding and curling. Use simple pop-ups. | <ul style="list-style-type: none"> Measure and mark out accurately. Cut materials accurately and safely by selecting appropriate tools. Cut slots. | <ul style="list-style-type: none"> Measure and mark out to the nearest mm. Use and explore complex pop-ups. Cut slots and internal shapes. Create nets. | <ul style="list-style-type: none"> Cut materials with precision. Cut accurately and safely to a marked line. Join/combine materials with temporary, fixed or moving joints. | <ul style="list-style-type: none"> Cut materials with precision and refine the finish with appropriate tools (such as sanding wood). Show an understanding of the qualities of materials to choose appropriate tools to cut and shape. | |
| Take inspiration from design throughout history | <ul style="list-style-type: none"> Explore objects and designs to identify likes and dislikes. Explore how products have been created. | <ul style="list-style-type: none"> Disassemble products to understand how they work. Improve on existing designs, giving reasons for choices. Identify some of the great designers in different areas of study to generate ideas from their designs. | <ul style="list-style-type: none"> Use knowledge of inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products to create their own innovative designs. | <ul style="list-style-type: none"> Analyse the work of others, including iconic designs to informal work. Understand developments in D and T and the responsibilities of designers, including environmental responsibilities. | | | |