

Curriculum Milestones- Design and Technology

Nursery	Talk about what they see using a wide vocabulary. To develop ideas about designs, expressing them by joining materials together using different techniques such as paper clips, glue and tape. Explore colour and texture through different materials. Develop imagination in pretend play through using open-ended and familiar resources to create small world scenes with different structures representing buildings, vehicles, places etc.				
Reception	Use a range of materials creatively, discussing how to overcome problems and articulate ideas for aims effectively. Work with increasing confidence in the creative area. Apply different techniques in order to improve the outcome of creations. Observe closely and talk about famous buildings and structures linked to other areas of the curriculum. Use a range of tools such as scissors, cutlery, paintbrushes and tweezers, safely with accuracy and confidence.				
		Skills		Technical Knowledge	Cooking and Nutrition
	<p style="text-align: center;">Design</p> <p>KS1 National Curriculum 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.</p> <p>KS2 National Curriculum 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</p>	<p style="text-align: center;">Make</p> <p>KS1 National Curriculum Select from and use a range of tools and equipment for ie 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.</p> <p>KS2 National Curriculum 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.</p>	<p style="text-align: center;">Evaluate</p> <p>KS1 National Curriculum Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria.</p> <p>KS2 National Curriculum 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.</p>	<p>KS1 National Curriculum 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.</p> <p>KS2 National Curriculum Apply their 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.</p>	<p>KS1 National Curriculum Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.</p> <p>KS2 National Curriculum 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.</p>

Year 1	<ul style="list-style-type: none"> • Talk about their own designs saying who will use it, what it is for and how it works. • Begin to use a simple design criteria. • Think of ideas based on own experiences. • Begin to develop design ideas through discussion. • Draw own design ideas and add labels. • Begin to explore materials, components and construction kits to develop ideas. 	<ul style="list-style-type: none"> • Plan by suggesting what to do next • Begin to select from a range of tools, equipment and materials. • Talk about using equipment safely. • Begin to use simple techniques to assemble, join and combine materials and components. • Use the correct and specific vocabulary when making their designs. • Begin to demonstrate an understanding of finishing techniques. 	<ul style="list-style-type: none"> • Begin to talk about and explore existing products including; who products are for, what products work and are used, what materials products are made from, what they like and dislike about products. • Talk about their designs and products, using sentence stems for support. • With support, use a simple design criteria to judge their product. • Talk about their own product using sentence stems: I like my . . . because . . . It would be even better if . . . 	<ul style="list-style-type: none"> • Know that a structure is something that has been made and put together. • To begin to understand that different structures are used for different purposes. • To know that a stable structure is one which is firmly fixed and unlikely to change or move. • Begin to give reasons what might make a structure more or less stable. • To know that a mechanism is the parts of an object that move together. • Use wheels and axles and understand how they work. • To know what a slider mechanism moves things from side to side. • To know that a lever is something that turns on a pivot. • To know that a 'joining technique' means connecting two pieces of material together. 	<ul style="list-style-type: none"> • Chop fruit and vegetables safely. • Identify if a food is a fruit or a vegetable, say why. • Learn where some fruits and vegetables grow. • Design food packaging that looks appealing by hand or using ICT. • Identify some information that should be on a food label. • Describe appearance, smell and taste of foods. • To know that 'diet' means the food or drink a person or animal usually eats. • To know that ingredients means the items in a mixture or recipe.
By the end of Year 2	<ul style="list-style-type: none"> • Explain their design or product including; who will use it, what it is for, how it works and how it is suitable for its intended purpose • Use a simple design criteria and say how the product meets it. • Think of ideas based on own experiences including things observed in school, at home, in gardens, playgrounds and the local community. • Draw own design ideas and add labels or notes and show motion when applicable. • Explore materials, components and construction kits to develop ideas. • Make mock ups / templates • Consider using ICT to present design ideas 	<ul style="list-style-type: none"> • Select from a range of tools and equipment and explain their choices • Follow procedures for health and safety and hygiene • Select from and use a range of materials and components. • Begin to mark and cut different and shape materials including food, mechanical components, textiles and construction materials • Use simple techniques to assemble, join and combine materials and components • Use finishing techniques 	<ul style="list-style-type: none"> • Talk about and explore existing products including; who products are for, what products work and are used, what materials products are made from, what they like and dislike about products. • Talk confidently about their designs and products. • Judge their product against a simple design criteria. • Compare their finished product to their design • Say what they like and what could have been better 	<ul style="list-style-type: none"> • To understand what 'stiff' and 'strong' structures are. • To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To know that different materials have different properties and are therefore suitable for different uses. • To include sliders and levers in their work and explain how they work. • To understand that different techniques for joining materials can be used for different purposes. • To be able to glue and sew to join fabric. 	<ul style="list-style-type: none"> • Learn how some fruits and vegetables grow. • Slice food safely using the bridge or claw grip. • Explain the most effective grip when slicing. • Design packaging that meets all aspects of a design brief by hand or using ICT. • Know which key information needs to be on a food label. • Describe the taste, texture and smell of foods. • Decide on food combinations based on taste testing, giving reasons. • To understand what makes a balanced diet.

Year 3	<ul style="list-style-type: none"> Describe the purpose of their products. Begin to explain how particular parts of their products work. Share and clarify ideas through discussion. Generate realistic ideas, focusing on the needs of the user. Communicate ideas through sketches, drawings and labelled diagrams. Know what a prototype is. 	<ul style="list-style-type: none"> With support, order the main stages of making. Select tools and equipment suitable for the task. Begin to demonstrate an understanding of procedures for safety and hygiene. Confidently use the range of materials and components experienced in KS1 and begin to use a wider range. Begin to assemble, join and combine materials and components with improving accuracy. Identify some finishing techniques. 	<ul style="list-style-type: none"> Consider and explore how well products have been designed and made Analyse why materials have been chosen Consider what methods of construction have been used Identify the strengths and areas for development in their ideas and products Refer to their design criteria as they design and make. Know that there are inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products. Name some. 	<ul style="list-style-type: none"> Understand that wide and flat based objects are more stable. Know that mechanical systems have an input, process and output. Know that pneumatic systems can be used as part of a mechanism. Begin to describe movement using vocabulary such as linear, reciprocating, rotary and oscillating. Join materials using one type of stitch. Know that where two pieces of fabric join, is called a seam. Use applique to mend or decorate fabric. To know that different fastenings are used for different purposes. Know that electrical systems have an input, process and output. To know that a Micro-Bit is a pocket sized, codable compute. 	<ul style="list-style-type: none"> To know that vegetables and fruits grow in certain seasons. When selecting ingredients, consider the taste, texture smell and appearance. Know how to prepare themselves and a work space to cook safely in. Follow the instructions within a recipe. Suggest points for improvement after making. To know that the amount of an ingredient in a recipe is known as the 'quantity'. Begin to measure and weigh ingredients.
By the end of Year 4	<ul style="list-style-type: none"> Work within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment Describe the design features of their products that will appeal to intended users Gather information about the needs and wants of particular individuals and groups before designing. Develop their own design criteria based on their findings and use these to inform their ideas. Communicate ideas through sketches, drawings and labelled diagrams. Model their ideas using prototypes. 	<ul style="list-style-type: none"> Order the main stages of making Select tools and equipment suitable for the task Select materials and components suitable for the task. Follow procedures for safety and hygiene Use a wider range of materials and components than KS1, textiles, food ingredients, mechanical components and electrical components. Assemble, join and combine materials and components with increasing accuracy Apply a range of finishing techniques with some accuracy 	<ul style="list-style-type: none"> Analyse how well products work, achieve their purpose Investigate and analyse who designed and made products as well as when and where Investigate and analyse whether products can be recycled or reused. Use their design criteria to evaluate their completed products. Be able to talk about inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products. 	<ul style="list-style-type: none"> To understand what a frame structure is and what a free-standing structure is. Be able to explain how pneumatic systems create movement. Confidently use vocabulary such as linear, reciprocating, rotary and oscillating to describe movement. Know that there are different types of stitching to join materials and select an appropriate type for the purpose. Know and be able to leave space on fabric for the seam. Incorporate an appropriate fastening into a design. Use simple electrical circuits and components in products. To know some features of a Micro-Bit and use to control output 	<ul style="list-style-type: none"> When selecting ingredients, consider seasonality and costing. Follow a recipe carefully. Cook safely, following basic hygiene rules. Adapt a recipe and evaluate the result based on taste, smell, texture and appearance. Evaluate and compare a range of products. To know the following cooking techniques: sieving, creaming, and rubbing method. Measure and weigh ingredients accurately.

Year 5

- Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- Carry out research to identify the needs, wants, preferences and values of particular individuals and groups.
- Develop a simple design specification to guide their thinking.
- Talk with increasing confidence about how parts of their products work.
- Share and clarify ideas through discussion.
- Add increasing detail to sketches, and diagrams to develop and communicate their ideas.
- Understand what a virtual model is and the pros and cons of traditional and CAD modelling.

- Explain their choice of tools and equipment in relation to the skills and techniques they will be using.
- Explain their choice of materials and components according to functional properties and aesthetic qualities.
- Produce appropriate lists of tools, equipment and materials that they need
- Measure, mark out, cut and shape materials and components with increasing accuracy.
- Use techniques that involve a number of steps
- Assemble, join and combine materials.
- and components with increasing accuracy.
- Follow procedures for safety and hygiene.
- Develop use of a wider range of increasingly complex materials and components.

- Investigate and analyse how well products have been designed and made and what methods of construction have been used.
- Investigate and analyse how well products work, achieve their purpose and meet user needs/wants.
- Identify the strengths and areas for development in their ideas and products.
- Consider the views of others, including intended users, to improve their work.
- Evaluate their ideas and products against their original design specification.
- Talk with improving confidence about inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products.

- Use the correct technical vocabulary for the projects they are undertaking.
- Demonstrate precision and finishing skills.
- Understand different ways to reinforce structures.
- Select and use a variety of appropriate tools safely.
- Select appropriate mechanical components, including cams, pulleys and gears, and explain why they suit the product.
- Show increasing confidence when using some different stitches e.g. cross stitch, running stitch, blanket stitch.
- Add decoration to a product using a variety of skills.
- Understand that using a template helps to accurately mark out a design on fabric.
- Use more complex electrical circuits and components.
- Programme a computer to monitor changes in the environment.

- Adapt a traditional recipe, understanding the impact on the nutritional value of the recipe.
- Write an amended method for a recipe to incorporate the changes to the recipe.
- Use equipment safely. Including knives, hot pans and hobs.
- Know how to avoid cross-contamination.
- Follow a step by step method carefully to make a recipe, developing some awareness of timings.
- Identify and evaluate the different products and recipes based on their nutritional differences.
- To understand where meat comes from.
- Know that 'processed food' has been put through multiple changes in a factory.

By the end of Year 6

- Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- Carry out research, using surveys, interviews, questionnaires and web-based resources.
- Identify the needs, wants, preferences and values of particular individuals and groups.
- Confidently explain how particular parts of their products work.
- Generate innovative ideas, drawing on research
- Use annotated sketches, cross-sectional drawings and diagrams (including exploded diagrams) to develop and communicate their ideas
- Use model, prototypes and pattern pieces to adapt their designs
- Make design decisions, taking account of constraints such as time, resources and cost
- Use computer-aided design to develop and communicate their ideas

- Formulate step-by-step plans as a guide to making
- Develop use of a wide range of increasingly complex materials and components, including construction kits, textiles, food ingredients, mechanical components and electrical components.
- Accurately measure, mark out, cut and shape materials and components to 1mm
- Use techniques that involve a number of steps.
- Accurately assemble, join and combine materials and components.
- Accurately apply a range of finishing techniques.
- Demonstrate resourcefulness when tackling practical problems.

- Investigate and analyse how well products have been designed and made and what methods of construction have been used.
- Investigate and analyse how well products work, achieve their purpose and meet user needs/wants.
- Identify the strengths and areas for development in their ideas and products.
- Investigate and analyse how much products cost to make, how innovative products and how sustainable the materials in products are.
- Explain what impact products have beyond their intended purpose.
- Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make.
- Talk with increasing confidence about inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products.

- Know that structures can be strengthened by manipulating materials and shapes.
- Confidently use the correct technical vocabulary for the projects they are undertaking.
- Select and use a variety of appropriate tools safely.
- Select appropriate mechanical components, including cams, pulleys and gears, and explain in increasing detail why they suit the product.
- Show increasing confidence when using a range of stitches to join fabric.
- Know and use a range of stitches to decorate a product.
- Understand and be able to use a template to accurately mark out a design on fabric.
- Use more complex electrical circuits and components with increasing confidence.
- Programme a computer to monitor changes in the environment.

- Write a recipe, explaining key steps, methods and ingredients.
- Adapt a recipe based on research.
- Work safely and hygienically with independence.
- Work to a given timescale.
- Evaluate a recipe, taste test and score final products.
- Suggest improvements.
- Evaluate health and safety in production including minimising cross contamination.
- Know that many countries have national dishes which are recipes associated with that country.