



Design & Technology

Curriculum Expectations

Engage		Activate	
EFYS	KS 1 NC Expectations	Key Stage 2 NC Expectations	Key Stage 3 + NC Expectations
<p>Expressive Arts and Design (Exploring and Using Media and Materials) Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>Expressive Arts and Design (Being Imaginative) Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.</p>	<p>Design Pupils should be taught to:</p> <ul style="list-style-type: none"> 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>Make Pupils should be taught to:</p> <ul style="list-style-type: none"> select from and use a range of tools and equipment to perform practical tasks select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. <p>Evaluate Pupils should be taught to:</p> <ul style="list-style-type: none"> explore and evaluate a range of existing products; evaluate their ideas and products against design criteria. <p>Technical Knowledge Pupils should be taught to:</p> <ul style="list-style-type: none"> build structures, exploring how they can be made stronger, stiffer and more stable; explore and use mechanisms in their products. <p>Cooking and Nutrition Pupils should be taught to:</p> <ul style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes; understand where food comes from 	<p>Design Pupils should be taught to:</p> <ul style="list-style-type: none"> 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>Make Pupils should be taught to:</p> <ul style="list-style-type: none"> 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>Evaluate Pupils should be taught to:</p> <ul style="list-style-type: none"> 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>Technical Knowledge</p> <ul style="list-style-type: none"> 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>Cooking and Nutrition Pupils should be taught to:</p> <ul style="list-style-type: none"> 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>Design</p> <ul style="list-style-type: none"> use research and exploration, such as the study of different cultures, to identify and understand user needs identify and solve their own design problems and understand how to reformulate problems given to them develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations use a variety of approaches to generate creative ideas and avoid stereotypical responses develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools <p>Make</p> <ul style="list-style-type: none"> select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties <p>Evaluate</p> <ul style="list-style-type: none"> analyse the work of past and present professionals and others to develop and broaden their understanding investigate new and emerging technologies test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists <p>Technical knowledge</p> <ul style="list-style-type: none"> understand and use the properties of materials and the performance of structural elements to achieve functioning solutions understand how more advanced mechanical systems used in their products enable changes in movement and force understand how more advanced electrical and electronic systems can be powered and used in their products apply computing and use electronics to embed intelligence in products that respond to inputs, and control outputs, using programmable components. <p>Cooking and nutrition Pupils should be taught to:</p> <ul style="list-style-type: none"> understand and apply the principles of nutrition and health cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet become competent in a range of cooking techniques understand the source, seasonality and characteristics of a broad range of ingredients.

Intent

Design and Technology aims to inspire children through a broad range of practical experiences to create innovative designs which solve real and relevant problems within a variety of different contexts. The design process encourages children to identify real and relevant problems, critically evaluate existing products and then take risks and innovate when designing and creating solutions to the problems. Opportunities are provided for children to evaluate key events and individuals who have helped shape the world, helping to inspire them to become the next generation of innovators.

Implementation

Design & Technology will be taught through engaging, motivating and progressive units across the school. Design & Technology lessons will:

- ❖ start with an engagement/thought provoking stimulus
- ❖ share a 'Big Learning Question'
- ❖ lead to some 'key enquiry questions'
- ❖ take the questions into a scheme of work
- ❖ allow pupils to develop their own Knowledge Organisers
- ❖ allow pupils to design & make
- ❖ facilitate the safe use of different materials and tools
- ❖ explore with foods and cooking with food, inc utensil use
- ❖ promote the skills to live independently
- ❖ allow pupils to evidence their learning using scrapbooks, photographs and products

Impact

To evidence that our pupils can do more and know more in Art & Design we will:

- ✓ Collate evidence to monitor progress
- ✓ Review knowledge organisers
- ✓ Interview pupils
- ✓ Monitor teaching
- ✓ Review schemes of work
- ✓ Follow achievements through progression maps
- ✓ Allow pupils to reflect on what they make

	EYFS	KS 1	KS 2	KS 3+
Design	<p>Continuous provision to allow pupils to experience, explore and enjoy drawing and construction activities</p>	<p>Children can:</p> <ul style="list-style-type: none"> a use their knowledge of existing products and their own experience to help generate their ideas; b design products that have a purpose and are aimed at an intended user; c explain how their products will look and work through talking and simple annotated drawings; d design models using simple computing software; e plan and test ideas using templates and mock-ups; f understand and follow simple design criteria; g work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment. 	<p>Children can:</p> <ul style="list-style-type: none"> a identify the design features of their products that will appeal to intended customers; b use their knowledge of a broad range of existing products to help generate their ideas; c design innovative and appealing products that have a clear purpose and are aimed at a specific user; d explain how particular parts of their products work; e use annotated sketches and cross-sectional drawings to develop and communicate their ideas; f when designing, explore different initial ideas before coming up with a final design; g when planning, start to explain their choice of materials and components including function and aesthetics; h test ideas out through using prototypes; i use computer-aided design to develop and communicate their ideas (see note on p. 1); j develop and follow simple design criteria; a work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment. 	<p>Children can:</p> <ul style="list-style-type: none"> a use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; b use their knowledge of a broad range of existing products to help generate their ideas; c design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; d explain how particular parts of their products work; e use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; f generate a range of design ideas and clearly communicate final designs; g consider the availability and costings of resources when planning out designs; h work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.

Make	Continuous provision to allow pupils to experience, explore and enjoy manipulating different tools to join, shape adapt materials for a purpose.	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> a with support, follow a simple plan or recipe; b begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer; c select from a range of materials, textiles and components according to their characteristics; <p>Practical skills and techniques</p> <ul style="list-style-type: none"> d learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures; e use a range of materials and components, including textiles and food ingredients; f with help, measure and mark out; g cut, shape and score materials with some accuracy; h assemble, join and combine materials, components or ingredients; i demonstrate how to cut, shape and join fabric to make a simple product; j manipulate fabrics in simple ways to create the desired effect; k use a basic running stitch; l cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups; m begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations. 	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> a with growing confidence, carefully select from a range of tools and equipment, explaining their choices; b select from a range of materials and components according to their functional properties and aesthetic qualities; c place the main stages of making in a systematic order; <p>Practical skills and techniques</p> <ul style="list-style-type: none"> d learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures; e use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components; f with growing independence, measure and mark out to the nearest cm and millimetre; g cut, shape and score materials with some degree of accuracy; h assemble, join and combine material and components with some degree of accuracy; i demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product; j join textiles with an appropriate sewing technique; k begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics. 	<p>Children can:</p> <p>Planning</p> <ul style="list-style-type: none"> a independently plan by suggesting what to do next; b with growing confidence, select from a wide range of tools and equipment, explaining their choices; c select from a range of materials and components according to their functional properties and aesthetic qualities; d create step-by-step plans as a guide to making; <p>Practical skills and techniques</p> <ul style="list-style-type: none"> e learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures; f independently take exact measurements and mark out, to within 1 millimetre; g use a full range of materials and components, including construction materials and kits, textiles, and mechanical components; h cut a range of materials with precision and accuracy; i shape and score materials with precision and accuracy; j assemble, join and combine materials and components with accuracy; k demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product; l join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch; m refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.

Evaluate	Continuous provision to allow pupils to experience, explore and enjoy problem solving and using trial and repair judgements	<p>Children can:</p> <ul style="list-style-type: none"> a explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; b explain positives and things to improve for existing products; c explore what materials products are made from; d talk about their design ideas and what they are making; e as they work, start to identify strengths and possible changes they might make to refine their existing design; f evaluate their products and ideas against their simple design criteria; g start to understand that the iterative process sometimes involves repeating different stages of the process. 	<p>Children can:</p> <ul style="list-style-type: none"> a explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose; b explore what materials/ingredients products are made from and suggest reasons for this; c consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product; d evaluate their product against their original design criteria; e evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world. 	<p>Children can:</p> <ul style="list-style-type: none"> a complete detailed competitor analysis of other products on the market; b critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make; c evaluate their ideas and products against the original design criteria, making changes as needed.

Technical Knowledge	<p>Continuous provision to allow pupils to experience, explore and enjoy using toys and equipment so they can learn how they work</p>	<p>Mechanisms Children can:</p> <ul style="list-style-type: none"> a build simple structures, exploring how they can be made stronger, stiffer and more stable; b talk about and start to understand the simple working characteristics of materials and components; a explore and create products using mechanisms, such as levers, sliders and wheels. 	<p>Mechanical, Electrical & Computing systems Children can:</p> <ul style="list-style-type: none"> a understand that materials have both functional properties and aesthetic qualities; b apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; c understand and demonstrate how mechanical and electrical systems have an input and output process; d make and represent simple electrical circuits, such as a series and parallel, and components to create functional products; e explain how mechanical systems such as levers and linkages create movement; a use mechanical systems in their products. 	<p>Mechanical, Electrical & Computing systems Children can:</p> <ul style="list-style-type: none"> a apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; b understand and demonstrate that mechanical and electrical systems have an input, process and output; c explain how mechanical systems, such as cams, create movement and use mechanical systems in their products; a apply their understanding of computing to program, monitor and control a product.
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Cooking & Nutrition	<p>Continuous provision to allow pupils to experience, explore and enjoy using, tasting and exploring with foods</p>	<p>Children can:</p> <ul style="list-style-type: none"> a explain where in the world different foods originate from; b understand that all food comes from plants or animals; c understand that food has to be farmed, grown elsewhere (e.g. home) or caught; d name and sort foods into the five groups in the Eatwell Guide; e understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; f use what they know about the Eatwell Guide to design and prepare dishes. 	<p>Children can:</p> <ul style="list-style-type: none"> a start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world; b understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically; c with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven; d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; e explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes; f understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; g prepare ingredients using appropriate cooking utensils; h measure and weigh ingredients to the nearest gram and millilitre; i start to independently follow a recipe; j start to understand seasonality. 	<p>Children can:</p> <ul style="list-style-type: none"> a know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world; b understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; c understand that food is processed into ingredients that can be eaten or used in cooking; d demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source; e demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling; f explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; g adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; h alter methods, cooking times and/or temperatures; i measure accurately and calculate ratios of ingredients to scale up or down from a recipe; j independently follow a recipe.
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