Design and Technology: Progression of Knowledge

By discipline · Years 3 to 6

Our design and technology strands

Development Question | Design Inspiration | Technical Knowledge | Practical Knowledge | Design Process | Evaluate

What children know and understand in each design and technology discipline, by year group. Shaded cells show a discipline that is not taught in that year.

	Cookery	Electrical Systems	Mechanical Systems	Digital World	Textiles	Structures
Year 3	• Children know that not all fruits and vegetables can be grown in the UK. • Children know that vegetables and fruit grow in certain seasons. • Children know that cooking instructions are known as a 'recipe'. • Children know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • Children understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • Children know safety rules for using, storing and cleaning a knife safely.		• Children know that mechanisms control movement. • Children understand that mechanisms can be used to change one kind of motion into another. • Children understand how to use sliders, pivots and folds to create paper-based mechanisms. • Children know that a design brief is a description of what they are going to design and make. • Children know that designers often want to hide mechanisms to make a product more aesthetically pleasing		• Children know that sewing is a method of joining fabric. • Children know that different stitches can be used when sewing. • Children understand the importance of tying a knot after sewing the final stitch. • Children know that a thimble can be used to protect their fingers when sewing.	
Year 4		• Children know how the components within a circuit are built to form a working circuit • Children know the names of the components in a basic series circuit. • Children know information about influential designers • Children know what a prototype is and why designers use them		• Children understand what variables are in programming. • Children know some of the features of a Crumble kit • Children know that an algorithm is a set of instructions to be followed by the computer. • Children know that it is important to check their code for errors (bugs). • Children know that a simulator can be used as a way of checking your code works before installing it onto an electronic device. • Children understand the terms 'ergonomic' and 'aesthetic'. • Children know that a prototype is a 3D model made out of cheap materials, that allows us to test design ideas and make better decisions about size, shape and materials.		

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Year 5			• Children understand that the mechanism in an automaton uses a system of cams, axles and followers. • Children understand that different shaped cams produce different outputs. • Children know that an automaton is a hand-powered mechanical toy. • Children know that a cross-sectional diagram shows the inner workings of a product. • Children understand how to use a bench hook and saw safely. • Children know that a set square can be used to help mark 90° angles.	• Children know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. • Children know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. • Children understand that conditional statements in programming are a set of rules which are followed if certain conditions are met • Children understand key developments in thermometer history. • Children know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. • Children know the 6Rs of sustainability. • Children understand what a virtual model is and the pros and cons of traditional vs CAD modelling.	• Children know that appliqué is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. • Children know that when two edges of fabric have been joined together it is called a seam. • Children know that it is important to leave space on the fabric for the seam. • Children understand that some products are turned inside out after sewing so the stitching is hidden.	• Children understand some different ways to reinforce structures. • Children understand how triangles can be used to reinforce bridges. • Children know that properties are words that describe the form and function of materials. • Children understand why material selection is important based on properties. • Children understand the material (functional and aesthetic) properties of wood. • Children know that structures can be strengthened by manipulating materials and shapes. • Children understand the difference between arch, beam, truss and suspension bridges. • Children understand how to carry and use a saw safely.
Year 6	• Children understand the difference between diet and nutrition • Children know the difference between a vegetarian, a vegan and a pescatarian diet • Children know that a recipe can be adapted to make it suitable for people who follow certain diets • Children know that they can use a nutritional calculator to see how healthy a food option is • Children understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects.	• Children know that batteries contain acid, which can be dangerous if they leak. • Children know the names of the components in a basic series circuit, including a buzzer. • Children know that 'form' means the shape and appearance of an object. • Children know the difference between 'form' and 'function'. • Children understand that 'fit for purpose' means that a product works how it should and is easy to use. • Children know that form over purpose means that a product looks good but does not work very well. • Children know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. • Children understand the diagram perspectives 'top view', 'side view' and 'back'				• Children know that structures can be strengthened by manipulating materials and shapes. • Children understand what a 'footprint plan' is. • Children understand that in the real world, design can impact users in positive and negative ways. • Children know that a prototype is a cheap model to test a design idea.