

Some ideas for Design and technology topics that align with the National Curriculum in England

Design and technology Tick List KS1 to KS3		
<p>Aims The national curriculum for design and technology aims to ensure that all pupils: ♣ <b>develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world</b> ♣ <b>build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users</b> ♣ <b>critique, evaluate and test their ideas and products and the work of others</b> ♣ <b>understand and apply the principles of nutrition and learn how to cook.</b></p>		
<b>Design</b>		KS1
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		
<b>Make</b>		KS1
select from and use a range of tools and equipment to perform practical tasks [for example, 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		
<b>Evaluate</b>		KS1
explore and evaluate a range of existing products		
evaluate their ideas and products against design criteria		
<b>Technical knowledge</b>		
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		

	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].	KS2
	<b>Design</b>	KS2
	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	
	<b>Make</b>	KS2
	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	
	<b>Evaluate</b>	KS2
	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	
	<b>Technical knowledge</b>	KS2
	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	
	<b>Cooking and nutrition</b> pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.	KS1 and KS2
	use the basic principles of a healthy and varied diet to prepare dishes	KS1
	understand where food comes from.	KS1
	understand and apply the principles of a healthy and varied diet	KS2
	prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques	KS2
	understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	KS2

<b>Key stage 3</b> Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture], and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion]			
	<b>Design</b>		KS3
	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 [for example, biomimicry and user-centred design], 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		
	<b>Make</b>		KS3
	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		
	<b>Evaluate</b>		KS3
	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		
	<b>Technical Knowledge</b>		KS3
	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 [for example, circuits with heat, light, sound and movement as inputs and outputs]		
	apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].		
	<b>Cooking and nutrition</b>		
	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 [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes]		
	understand the source, seasonality and characteristics of a broad range of ingredients.		