



Department  
for Education

# Design and technology programmes of study: key stages 1 and 2

## National curriculum in England

### Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

### Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- 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
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

### Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

**Schools are not required by law to teach the example content in [square brackets].**

## Subject content

### Key stage 1

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 and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

#### Design

- 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

#### Make

- 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

#### Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

#### Technical knowledge

- 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.

## Key stage 2

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].

When designing and making, pupils should be taught to:

### Design

- 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

### Make

- 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

### Evaluate

- 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

### Technical 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.

## Cooking and nutrition

As part of their work with food, 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.

Pupils should be taught to:

### Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

### Key stage 2

- 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.

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Reference: DFE-00172-2013

	Y3-4	Y5	Y6
<b>Designing: Understanding contexts, users and purposes</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> a1 I can say what product I am designing and making	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> A I can describe the purposes of my products	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> a2 I can describe what my product is for (its purpose)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> B I can point out the design features of my products that will appeal to the person or people who I designed it for (intended users)	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> b1 I can say who the product is for (who is going to use it)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> C I can explain how different parts of my products work	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> b2 I can say how I have made my product suitable for the person or people who will use it	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> b I can find out about the needs and wants of particular individuals and groups	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> b1 I can use surveys, interviews, questionnaires and web-based resources to find out about the needs and wants of particular individuals and groups
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 1c I can say how my product will work	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> c1 I can work out a set of design criteria for a product	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> b2 I can identify the needs, wants, preferences and values of particular individuals and groups
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> c2 When I am designing products, I can say how my design fits some of the design criteria I have been given.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> c2 I use design criteria to come up with some suitable ideas for my product	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> c I can develop a simple design specification of my own to guide my thinking when designing	
<b>Designing: Generating, developing, modelling and communicating ideas</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> d1 I can think up more than one idea when I am asked to design something	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> D When I discuss my designs with others, they understand what I mean and discussion helps me make my designs clearer	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> d2 I use what I know about existing products to help come up with ideas	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E1 I can produce annotated sketches, cross-sectional drawings and exploded diagrams to help me develop and improve my ideas and communicate my ideas to others	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> e1 I work out my design ideas by talking and drawing	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E2 I can use a CAD program to help me develop and communicate my ideas	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> e2 I can use the computer to work out and show others my ideas (e.g. including using a graphics program)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> F I can model my design ideas using prototypes and pattern pieces	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> f I can try out my ideas by using different materials and components, by using construction kits and by making templates and mock-ups	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> d I can think up realistic ideas for my designs	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> d1 When I am designing, I use my research to help me make good designs
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> g1 My ideas take the needs of the user into account	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> d2 I can think up some creative and original ideas for my designs	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> g2 When I am designing, I take into account what resources are available for me to use	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> g When I am designing, I take into account how much time I have, and costs of materials as well as what resources are available	
<b>Making: Planning</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> h1 I can choose from a range of tools and equipment I am given and say why I chose what I did	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> H1 I select tools and equipment suitable for the task	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> h2 When I choose from a range of materials and components (parts), I think about what they are like and whether this makes them suitable	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> H2 When I explain my choice of tools and equipment, I can refer to the skills and techniques I will be using	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> i When I am making my products, I can say what I should do next	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> H3 When I select materials and components, I choose ones which are suitable for the task	
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> H4 When I explain my choice of materials and components, I can refer to their functional properties (how they "work") and aesthetic qualities (how good they look, feel, etc.)	
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> i1 I can plan the main stages of making my product	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> h I can make appropriate lists of tools, equipment and materials that I will need to make my product
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> i2 I can list the main stages (in order) for making my product	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> i1 I can make step-by-step plans as a guide to making particular parts of my product	
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> i2 I review and update my step-by-step plans as I am making my product	
<b>Making: Practical skills and techniques</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> j1 I follow instructions in lessons so that I work safely	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> J I follow procedures for safety and hygiene	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> j2 I always wash my hands properly when handling food and only work on surfaces that have been properly cleaned	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> K I can use a good range of materials and components including construction materials and kits, textiles, food ingredients, mechanical components and electrical components	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> k I can put components together (assemble); I can join a range of different materials	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> k I assemble, join and combine materials and components with some accuracy	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> k1 I accurately assemble, join and combine materials and components
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> l I can measure, mark out, cut and shape materials and components	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> l I measure, mark out, cut and shape materials and components with some accuracy	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> k2 I can use techniques that involve a number of steps
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> m I can use different finishing techniques, including those I learned in art and design lessons	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> m I can apply a range of finishing techniques, including those from art and design, with some accuracy	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> l I accurately measure, mark out, cut and shape materials and components
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> m I accurately apply a range of finishing techniques, including those from art and design	
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> a I demonstrate resourcefulness when tackling practical problems	
<b>Evaluating: Own ideas and products</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> n1 I can talk about my design ideas and what I am making	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N I can identify the strengths and areas for development in my ideas and products	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> n2 I can say what I think about my products and ideas against design criteria	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> O I think about the views of others, including the intended users, to help me improve my work	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> o I can suggest how my products could be improved	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> P I use my design criteria as I design and make my products	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> P I think about the quality of the design, manufacture and fitness for purpose of my products as I make my products and make improvements I think of
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> q I use my design criteria to evaluate my completed products	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> q1 I evaluate my design ideas against my original design specification and evaluate the quality of the design and its fitness for purpose as I develop my ideas
			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> q2 I evaluate my finished products against my original design specification
<b>Evaluating: Existing products</b>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> r I can think and talk about what products are	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R I can investigate products and make comments about how well they have been designed	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> s1 I can think and talk about who products are designed for	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> S I can investigate products and make comments about how well they meet user needs and wants	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> s2 I can think and talk about what products are for	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> T I can investigate products and make comments about how well they work and achieve their purposes	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> t I can think and talk about how products work	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> V I can investigate products and make comments about why certain materials have been chosen	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> u I can think and talk about how and where products are used	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> X I can investigate products and make comments about what methods of construction have been used	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> v I can think and talk about what materials products are made from	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Y I can investigate products and make comments about how well they have been made	
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> w I can think and talk about what I like and dislike about products	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> y I can research some products to find out if they can be recycled or reused	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> v I can research and discuss how sustainable some materials in products are
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> z1 I can research some products to find out who designed and made them	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> z1 I can research and discuss how innovative some products are
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> z2 I can research some products to find out where and when they were designed and made	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> z2 I can research and discuss the impact some products have beyond their intended purpose	
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> z3 I can research and discuss how much some products cost to make	