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New Curriculum 2014

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].

Design and technology – key stages 1 and 2
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.

Design and technology – key stages 1 and 2

Updated : DATE
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.

Design and technology – key stages 1 and 2
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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# Foundation Stage

<table>
<thead>
<tr>
<th>Title of unit</th>
<th>Skills covered</th>
<th>New curriculum, skills</th>
</tr>
</thead>
</table>
| Developing, planning and communicating ideas | • to draw on their own experience to help generate ideas  
• to suggest ideas and explain what they are going to do |
| Nursery | Moving and handling -30 to 50m  
• draws lines and circles using gross motor movements  
• uses one handed tools and equipment e.g. makes snips in paper with child scissors  
Expressive arts and design – media and materials – 30 to 50m  
• beginning to be interested in and describe the texture of things  
• uses various construction materials  
• beginning to construct, stacking blocks vertically and horizontally  
• joins construction pieces together to build and balance  
• realizes tools can be used for a purpose |
| Reception | Moving and handling – 40 to 60m  
• uses simple tools to effect changes to materials  
• handles tools, objects, construction and malleable materials safely and with increasing control  
Expressive arts and design – media and materials – 40 to 60m  
• manipulates materials to achieve a planned effect  
• constructs with a purpose in mind, using a variety of resources  
• uses simple tools and techniques competently and appropriately  
• selects appropriate resources and adapts work where necessary  
• selects tools and techniques needed to shape, assemble and join materials they are using |
| Evaluating processes and products | • to evaluate their product by talking about the things that went well and the things that did not work. |
# Year 1

<table>
<thead>
<tr>
<th>Title of unit</th>
<th>Skills covered New curriculum, skills</th>
</tr>
</thead>
</table>
| Developing, planning and communicating ideas | • to draw on their own experience to help generate ideas  
• to suggest ideas and explain what they are going to do  
• to identify a target group for what they intend to design and make  
• to model their ideas in card and paper  
• to develop their design ideas applying findings from their earlier research  
• to appreciate the need for good design by exploring a range of design and designers |
| Working with tools, equipment, materials and components to make quality products | • to make their design using appropriate techniques  
• with help to measure, mark out, cut and shape a range of materials  
• how to use tools eg scissors and a hole punch safely  
• to explore different materials, and become familiar with their properties and uses  
• to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape  
• To build structures, exploring how they can be made stronger, stiffer and more stable  
• use simple finishing techniques to improve the appearance of their product  
• to select and use appropriate fruit and vegetables, processes and tools  
• basic food handling, hygienic practices and personal hygiene  
• understand where food comes from  
• to use the basic principles of nutrition and healthy eating to prepare a healthy and varied dish |
| Evaluating processes and products | • to evaluate their product by discussing how well it works in relation to the purpose  
• to evaluate their products as they have developed, identifying strengths and possible changes they might make  
• to evaluate their product by asking questions about what they have made and how they have gone about it |

# Year 2
<table>
<thead>
<tr>
<th>Title of unit</th>
<th>Skills covered</th>
<th>New curriculum, skills</th>
</tr>
</thead>
</table>
| Developing, planning and communicating ideas | • to generate ideas by drawing on their own and other people’s experiences  
• to develop their design ideas through discussion, observation, drawing, templates, mock-ups and communication technology  
• to identify a purpose for what they intend to design and make and work in a range of relevant contexts  
• to identify simple design criteria  
• to make simple drawings and label parts | |
| Working with tools, equipment, materials and components to make quality products | • to explore different materials and become familiar with their properties and uses  
• modelling in 2D and 3D and, where appropriate, using information technology to record the development of their designs  
• begin to independently select tools and materials; use vocab’ to name and describe them  
• to measure, cut and score with some accuracy  
• to use hand tools safely and appropriately  
• explore and use mechanisms (for example levers, sliders, wheels and axles)  
• To build structures, exploring how they can be made stronger, stiffer and more stable  
• to choose and use appropriate finishing techniques | |
| Evaluating processes and products | • to evaluate against their design criteria  
• to explore and evaluate a range of existing products  
• to evaluate their products as they are developed, identifying strengths and possible changes they might make  
• talk about their ideas, saying what they like and dislike about them | |
### Year 3

<table>
<thead>
<tr>
<th>Title of unit</th>
<th>Skills covered <strong>New curriculum</strong>, skills</th>
</tr>
</thead>
</table>
| Developing, planning and communicating ideas | • to research and develop the design criteria to inform their design  
• to generate ideas for an item, considering its purpose and user/s  
• to identify a purpose and establish criteria for a successful product.  
• to plan the order of their work before starting  
• to explore, develop and communicate design proposals by modelling ideas  
• to generate, develop and communicate their ideas through discussion, annotated sketches and diagrams. |
| Working with tools, equipment, materials and components to make quality products | • to select tools and techniques for making their product  
• measure, mark out, cut, score and assemble components with more accuracy  
• to work safely and accurately with a range of simple tools to think about their ideas as they make progress and be willing to change things if this helps them to improve their work  
• to apply their understanding of how to strengthen, stiffen and reinforce more complex structures using a range of equipment including ICT  
• understand how to use a mechanical system in their product (for example, gears, pulleys, cams, levers and linkages) |
| Evaluating processes and products    | • to explore and evaluate a range of existing products  
• to evaluate their product against original design criteria e.g. how well it meets its intended purpose  
• to disassemble and evaluate familiar products |
# Year 4

<table>
<thead>
<tr>
<th>Title of unit</th>
<th>Skills covered <strong>New curriculum</strong>, skills</th>
</tr>
</thead>
</table>
| Developing, planning and communicating ideas | • to consider the purpose for which they are designing  
• to generate, develop and communicate their ideas through discussion, annotated sketches and diagrams from different views showing specific features  
• to develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail  
• to evaluate products and identify criteria that can be used for their own designs |
| Working with tools, equipment, materials and components to make quality products | • to select appropriate tools and techniques for making their product  
• to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques *(for example cutting, shaping, joining and finishing)* accurately  
• to join and combine materials and components accurately in temporary and permanent ways  
• to sew using a range of different stitches, to weave and knit  
• to measure, tape or pin, cut and join fabric with some accuracy  
• to use simple graphical communication techniques  
• demonstrate hygienic food preparation and storage  
• understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed |
| Evaluating processes and products     | • to evaluate their work both during and at the end of the assignment **considering the views of others to improve their work**  
• to evaluate their products carrying out appropriate tests |

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# Year 5
<table>
<thead>
<tr>
<th>Title of unit</th>
<th>Skills covered <strong>New curriculum</strong>, skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing, planning and</td>
<td></td>
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<tr>
<td>communicating ideas</td>
<td>to use research to design innovative,</td>
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<tr>
<td></td>
<td>functional, appealing product aimed at a</td>
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<tr>
<td></td>
<td>particular individual or group</td>
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<tr>
<td></td>
<td>to generate, develop, model and</td>
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<td></td>
<td>communicate their ideas through</td>
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<tr>
<td></td>
<td>discussion, annotated sketches,</td>
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<td></td>
<td>cross-sectional and exploded diagrams,</td>
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<td></td>
<td>prototypes, pattern pieces and</td>
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<tr>
<td></td>
<td>computer-aided design</td>
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<tr>
<td></td>
<td>to draw up a specification for their</td>
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<td></td>
<td>design</td>
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<tr>
<td></td>
<td>to develop a clear idea of what has to</td>
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<td></td>
<td>be done, planning how to use materials,</td>
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<tr>
<td></td>
<td>equipment and processes, and</td>
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<tr>
<td></td>
<td>suggesting alternative methods of</td>
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<tr>
<td></td>
<td>making if the first attempts fail</td>
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<tr>
<td></td>
<td>to use results of investigations,</td>
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<td></td>
<td>information sources, including ICT</td>
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<tr>
<td></td>
<td>when developing design ideas</td>
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<tr>
<td>Working with tools, equipment,</td>
<td></td>
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<tr>
<td>materials and components to</td>
<td>to select appropriate materials, tools</td>
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<tr>
<td>make quality products</td>
<td>and techniques</td>
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<tr>
<td></td>
<td>to measure and mark out accurately</td>
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<td></td>
<td>to use skills in using different tools</td>
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<td></td>
<td>and equipment safely and accurately</td>
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<td>to cut and join with accuracy to</td>
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<td></td>
<td>ensure a good-quality finish to the</td>
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<td></td>
<td>product</td>
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<td></td>
<td>to apply their understanding of how to</td>
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<td></td>
<td>strengthen, stiffen and reinforce more</td>
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<td></td>
<td>complex structures using a range of</td>
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<tr>
<td></td>
<td>equipment including ICT</td>
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<tr>
<td></td>
<td>understand how to use a mechanical</td>
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<tr>
<td></td>
<td>system in their product (for example,</td>
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<tr>
<td></td>
<td>gears, pulleys, cams, levers and</td>
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<tr>
<td></td>
<td>linkages)</td>
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<tr>
<td></td>
<td>understand and use electrical systems</td>
</tr>
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<td></td>
<td>in their product (for example, series</td>
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<td></td>
<td>circuits incorporating switches, bulbs,</td>
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<td></td>
<td>buzzers and motors)</td>
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<td></td>
<td>to apply the rules for basic food</td>
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<td></td>
<td>hygiene and other safe practices</td>
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<td>e.g. hazards relating to the use of</td>
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<td></td>
<td>ovens</td>
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<tr>
<td></td>
<td>understand and apply the principles of</td>
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<tr>
<td></td>
<td>a healthy and varied diet</td>
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<tr>
<td>Evaluating processes and products</td>
<td></td>
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<tr>
<td></td>
<td>to evaluate a product against the</td>
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<td></td>
<td>original design specification</td>
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<td></td>
<td>to evaluate it personally and seek</td>
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<td></td>
<td>evaluation from others to improve their</td>
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<td></td>
<td>work</td>
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<tr>
<td></td>
<td>to understand how key events in design</td>
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<tr>
<td></td>
<td>and technology have helped shape the</td>
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<td></td>
<td>world (link to food DT)</td>
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</tbody>
</table>
# Year 6

<table>
<thead>
<tr>
<th>Title of unit</th>
<th>Autumn</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
</table>
| Developing, planning and communicating ideas | • to develop a design specification  
• to plan the order of their work, choosing appropriate materials, tools and techniques  
• to use research to design innovative, functional, appealing product aimed at a particular individual or group  
• to generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design | | |
| Working with tools, equipment, materials and components to make quality products | • to select appropriate and a wider range of tools, materials, components and techniques according to their functional properties and aesthetic qualities  
• to assemble components to make working models  
• to use tools safely and accurately  
• to construct products using permanent joining techniques (for example cutting, shaping, joining and finishing)  
• apply understanding of how to strengthen, stiffen and reinforce more complex structures  
• to make modifications as they go along  
• to measure, tape or pin, cut and join fabric with some accuracy  
• to pin, sew and stitch materials together to create a product  
• to achieve a quality product  
• understand and use electrical systems in their products (for example series circuits incorporating switches, bulbs, buzzers and motors)  
• apply understanding of computing to program, monitor and control their product | | |
| Evaluating processes and products | • to evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests  
• consider the views of others to improve their work  
• to record their evaluations using drawings with labels  
• to evaluate against their original criteria and suggest ways that their product could be improved  
• understand how key events and individuals in design technology have helped shape the world | | |

Skills covered **New curriculum**, skills
### Design and Technology Skills Progression

<table>
<thead>
<tr>
<th>Reception</th>
<th>Design and make a photograph frame for a Christmas gift</th>
<th>Design and make a fairy tale puppet</th>
<th>Design and make a healthy sandwich to take to the park for a teddy bears picnic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year One</td>
<td>Design, make and evaluate a global home from around the world including a moving part</td>
<td>Design make and evaluate a bridge to support a model car.</td>
<td>Design, make and evaluate a healthy fruit crumble/fruit salad/fruit smoothie/fruit kebab</td>
</tr>
<tr>
<td>Year Two</td>
<td>Design make and evaluate a Mexican salsa Design make and evaluate an alien with a moving part (using reclaimed materials).</td>
<td>Design and make a home for a baby dragon. Computing a programme – program Roama to move around the houses</td>
<td>Children to design and make an electrical circuit to add Lights to a punch and Judy show.</td>
</tr>
<tr>
<td>Year Three</td>
<td>Design, make and evaluate a Greek temple.</td>
<td>Design and make a tribal musical instrument.</td>
<td>Design make and evaluate a moving monster - pneumatics</td>
</tr>
<tr>
<td>Year Four</td>
<td>Design and make a Viking pop up book. Children to read books to a younger class then evaluate using pupil feedback. design, make and evaluate a royal sampler.</td>
<td></td>
<td>Design make and evaluate a.========== using Fair Trade produce. Children to develop their enterprising skills and sell food items. Money raised to go to and African charity.</td>
</tr>
<tr>
<td>Year Five</td>
<td>Research alternative ingredients used in WW2. Design and make WW2 healthy biscuits. Enterprising by selling them and donating money to poppy day ….could change to a savoury dish, maybe a ww2 meal starter, main and desert.</td>
<td>Design make and evaluate a moving toy using cams</td>
<td>Design, make and evaluate a Tudor treasure chest with a flashing light</td>
</tr>
<tr>
<td>Year Six</td>
<td>Design and make a working volcano</td>
<td>Design, make and evaluate gloves that would be most effective in artic conditions. Design, make and evaluate a nutritional soup for an explorer</td>
<td>Research different computing programmes. Children to design make and evaluate Victorian fairground rides with a flashing light or sound</td>
</tr>
</tbody>
</table>

### Design and Technology coverage (ideas)

**Textiles**
- Structures
- Mechanisms, gears, pulleys and cams
- Electrical systems
- Computing a programme