



By the end of Reception, pupils will know and be able to:

Creating with Materials (ELG)

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
- Share their creations, explaining the process they have used

By the end of year 1 pupils will know and be able to:

Recognises characteristics of familiar products.
Makes a simple design for a product.
Makes a simple product with support.
Uses appropriate materials and small tools and equipment safely.
Makes comments about their work.
Shows awareness of hygiene and simple techniques in food preparation.

By the end of year 2 pupils will know and be able to:

Understanding contexts, users and purposes

- work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment
- state what products they are designing and making
- say whether their products are for themselves or other users
- describe what their products are for
- say how their products will work
- say how they will make their products suitable for their intended users
- use simple design criteria to help develop their ideas

Generating, developing, modelling and communicating ideas

- generate ideas by drawing on their own experiences
- use knowledge of existing products to help come up with ideas
- develop and communicate ideas by talking and drawing
- model ideas by exploring materials, components and construction kits and by making templates and mock- ups
- use information and communication technology, where appropriate, to develop and communicate their ideas

## Planning

- plan by suggesting what to do next
- select from a range of tools and equipment, explaining their choices
- select from a range of materials and components according to their characteristics

## Practical skills and techniques

- follow procedures for safety and hygiene
- use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components
- measure, mark out, cut and shape materials and components
- assemble, join and combine materials and components
- use finishing techniques

## Own ideas and products

- talk about their design ideas and what they are making
- make simple judgements about their products and ideas against design criteria
- suggest how their products could be improved

## Existing products

- what products are
- who products are for
- what products are for
- how products work
- how products are used
- where products might be used
- what materials products are made from
- what they like and dislike about products

## Making products work

- about the simple working characteristics of materials and components
- about the movement of simple mechanisms such as levers, sliders, wheels and axles
- how freestanding structures can be made stronger, stiffer and more stable
- that a 3-D textiles product can be assembled from two identical fabric shapes
- that food ingredients should be combined according to their sensory characteristics
- the correct technical vocabulary for the projects they are undertaking
- how to name and sort foods into the five groups in The eatwell plate
- that everyone should eat at least five portions of fruit and vegetables every day
- how to prepare simple dishes safely and hygienically, without using a heat source
- how to use techniques such as cutting, peeling and grating

## Where food comes from

- that all food comes from plants or animals
- that food has to be farmed, grown elsewhere (e.g. home) or caught

## Food preparation, cooking and nutrition

- how to name and sort foods into the five groups in The eatwell plate
- that everyone should eat at least five portions of fruit and vegetables every day
- how to prepare simple dishes safely and hygienically, without using a heat source
- how to use techniques such as cutting, peeling and grating

By the end of year 3 pupils will know and be able to:

Investigates existing products.
Uses a given design brief and design criteria to produce a final product.
Uses appropriate small tools and equipment safely and accurately.
Evaluates products against design criteria and suggests improvements.
Uses a range of techniques e.g. spreading and mixing, to prepare food for a party, safely and hygienically.

By the end of year 4 pupils will know and be able to:

## Understanding contexts, users and purposes

Across KS2 pupils should:

- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- describe the purpose of their products
- indicate the design features of their products that will appeal to intended users
- explain how particular parts of their products work

In early KS2 pupils should also:

- gather information about the needs and wants of particular individuals and groups
- develop their own design criteria and use these to inform their ideas

## Generating, developing, modelling and communicating ideas

Across KS2 pupils should:

- share and clarify ideas through discussion
- model their ideas using prototypes and pattern pieces
- use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas
- use computer-aided design to develop and communicate their ideas

In early KS2 pupils should also:

- generate realistic ideas, focusing on the needs of the user
- make design decisions that take account of the availability of resources

### Planning

Across KS2 pupils should:

- select tools and equipment suitable for the task
- explain their choice of tools and equipment in relation to the skills and techniques they will be using
- select materials and components suitable for the task
- explain their choice of materials and components according to functional properties and aesthetic qualities

In early KS2 pupils should also:

- order the main stages of making

### Practical skills and techniques

Across KS2 pupils should:

- follow procedures for safety and hygiene
- use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

In early KS2 pupils should also:

- measure, mark out, cut and shape materials and components with some accuracy
- assemble, join and combine materials and components with some accuracy
- apply a range of finishing techniques, including those from art and design, with some accuracy

### Own ideas and products

Across KS2 pupils should:

- identify the strengths and areas for development in their ideas and products
- consider the views of others, including intended users, to improve their work

In early KS2 pupils should also:

- refer to their design criteria as they design and make
- use their design criteria to evaluate their completed products

### Existing products

Across KS2 pupils should investigate and analyse:

- how well products have been designed
- how well products have been made
- why materials have been chosen
- what methods of construction have been used
- how well products work
- how well products achieve their purposes
- how well products meet user needs and wants

In early KS2 pupils should also investigate and analyse:

- who designed and made the products
- where products were designed and made
- when products were designed and made
- whether products can be recycled or reused

### Events and individuals

Across KS2 pupils should know:

- about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products

### Making products work

Across KS2 pupils should know:

- how to use learning from science to help design and make products that work
- how to use learning from mathematics to help design and make products that work
- that materials have both functional properties and aesthetic qualities
- that materials can be combined and mixed to create more useful characteristics
- that mechanical and electrical systems have an input, process and output
- the correct technical vocabulary for the projects they are undertaking

In early KS2 pupils should also know:

- how mechanical systems such as levers and linkages or pneumatic systems create movement
- how simple electrical circuits and components can be used to create functional products
- how to program a computer to control their products
- how to make strong, stiff shell structures
- that a single fabric shape can be used to make a 3D textiles product
- that food ingredients can be fresh, pre-cooked and processed

### Where food comes from

Across KS2 pupils should know:

- that a recipe can be adapted a by adding or substituting one or more ingredients
- that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world

In early KS2 pupils should also know:

- that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate
- that to be active and healthy, food and drink are needed to provide energy for the body

### Food preparation, cooking and nutrition

Across KS2 pupils should know:

- how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source
- how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

In early KS2 pupils should also know:

- that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate
- that to be active and healthy, food and drink are needed to provide energy for the body

By the end of year 5 pupils will know and be able to:

Analyses existing products.
Generates their own design criteria, considering appearance, purpose and construction.
Uses a variety of appropriate techniques, materials and tools safely and accurately.
Produces an evaluation of the finished product, identifying strengths and weaknesses of the design.
Uses a range of techniques to prepare and cook savoury dishes safely and hygienically.

By the end of year 6 pupils will know and be able to:

#### Understanding contexts, users and purposes

Across KS2 pupils should:

- work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment
- describe the purpose of their products
- indicate the design features of their products that will appeal to intended users
- explain how particular parts of their products work

In late KS2 pupils should also:

- carry out research, using surveys, interviews, questionnaires and web-based resources
- identify the needs, wants, preferences and values of particular individuals and groups
- develop a simple design specification to guide their thinking

#### Generating, developing, modelling and communicating ideas

Across KS2 pupils should:

- share and clarify ideas through discussion
- model their ideas using prototypes and pattern pieces
- use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas
- use computer-aided design to develop and communicate their ideas

In late KS2 pupils should also:

- generate innovative ideas, drawing on research
- make design decisions, taking account of
- constraints such as time, resources and cost

### Planning

Across KS2 pupils should:

- select tools and equipment suitable for the task
- explain their choice of tools and equipment in relation to the skills and techniques they will be using
- select materials and components suitable for the task
- explain their choice of materials and components according to functional properties and aesthetic qualities

In late KS2 pupils should also:

- produce appropriate lists of tools, equipment and materials that they need
- formulate step-by-step plans as a guide to making

### Practical skills and techniques

Across KS2 pupils should:

- follow procedures for safety and hygiene
- use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components

In late KS2 pupils should also:

- accurately measure, mark out, cut and shape materials and components
- accurately assemble, join and combine materials and components
- accurately apply a range of finishing techniques, including those from art and design
- use techniques that involve a number of steps
- demonstrate resourcefulness when tackling practical problems

### Own ideas and products

Across KS2 pupils should:

- identify the strengths and areas for development in their ideas and products
- consider the views of others, including intended users, to improve their work

In late KS2 pupils should also:

- critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make
- evaluate their ideas and products against their original design specification

### Existing products

Across KS2 pupils should investigate and analyse:

- how well products have been designed
- how well products have been made
- why materials have been chosen
- what methods of construction have been used
- how well products work
- how well products achieve their purposes
- how well products meet user needs and wants

In late KS2 pupils should also investigate and analyse:

- how much products cost to make
- how innovative products are
- how sustainable the materials in products are
- what impact products have beyond their intended purpose

### Events and individuals

Across KS2 pupils should know:

- about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products

### Making products work

Across KS2 pupils should know:

- how to use learning from science to help design and make products that work
- how to use learning from mathematics to help design and make products that work
- that materials have both functional properties and aesthetic qualities
- that materials can be combined and mixed to create more useful characteristics
- that mechanical and electrical systems have an input, process and output
- the correct technical vocabulary for the projects they are undertaking

In late KS2 pupils should also know:

- how mechanical systems such as cams or pulleys or gears create movement
- how more complex electrical circuits and components can be used to create functional products
- how to program a computer to monitor changes in the environment and control their products
- how to reinforce and strengthen a 3D framework
- that a 3D textiles product can be made from a combination of fabric shapes
- that a recipe can be adapted by adding or substituting one or more ingredients

### Where food comes from

Across KS2 pupils should know:

- that a recipe can be adapted a by adding or substituting one or more ingredients



- that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world

In early KS2 pupils should also know:

- that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate
- that to be active and healthy, food and drink are needed to provide energy for the body

In late KS2 pupils should also know:

- that seasons may affect the food available
- how food is processed into ingredients that can be eaten or used in cooking

### Food preparation, cooking and nutrition

Across KS2 pupils should know:

- how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source
- how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking

In late KS2 pupils should also know:

- that recipes can be adapted to change the appearance, taste, texture and aroma that different food and drink contain different substances – nutrients, water and fibre – that are needed for health