

# Design and Technology Skills – Key Stage 1

## Designing

### Understanding contexts, users and purposes Generating, developing, modelling and communicating ideas

- 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.

## Making

### 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, including those from art and design.

## Evaluating

### 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

- Across KS1 pupils should explore: 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.

## Technical knowledge

### Making products work

- Across KS1 pupils should know:
  - 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.

## Cooking and Nutrition

## Where food comes from

- Across KS1 pupils should know:
  - 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

- Across KS1 pupils should know:
  - 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.

## Design and Technology Skills – Key Stage 2

### Designing

#### Understanding contexts, users and purposes Generating, developing, modelling and communicating ideas

- 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.
- 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 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.
- 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 early KS2 pupils should also:
  - Order the main stages of making.
- 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 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.
- 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.

### **Evaluating**

#### **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.
- 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 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.
- 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.

#### **Key events and individuals**

- Across KS2 pupils should know:
  - About inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products.

### **Technical knowledge**

#### **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.
  - Those materials have both functional properties and aesthetic qualities.
  - Those 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.
  - Those food ingredients can be fresh, pre-cooked and processed.
- 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.

## **Cooking and Nutrition**

### **Where food comes from**

- Across KS2 pupils should know:
- 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 late KS2 pupils should also know:
- Those 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 savory 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 eat well plate.'
  - That to be active and healthy, food and drink is needed to provide energy for the body.
- In late KS2 pupils should also know:
- Those 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.