# Design and Technology Pathway

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## Intent

At Camelford Primary we use Kapow Primary's Design and Technology scheme of work which aims to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation, and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling, and testing and to be reflective learners who evaluate their work and the work of others. Through our scheme of work, we aim to build an awareness of the impact of design and technology on our lives and encourage pupils to become resourceful, enterprising citizens who will have the skills to contribute to future design advancements.

Kapow Primary's Design and technology scheme of work enables pupils to meet the end of key stage attainment targets in the national curriculum and the aims also align with those in the national curriculum.

## Implementation

The Design and Technology national curriculum outlines the three main stages of the design process: design, make and evaluate. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical, and technical understanding required for each strand. Cooking and nutrition* has a separate section, with a focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality.

The National curriculum organises the Design and technology attainment targets under five strands:

Design - Make - Evaluate - Technical knowledge - Cooking and nutrition*

Kapow Primary's Design and technology scheme has a clear progression of skills and knowledge within these five strands across each year group. Our National curriculum mapping shows which of our units cover each of the National curriculum attainment targets as well as each of the five strands. Our Progression of skills shows the skills that are taught within each year group and how these skills develop to ensure that attainment targets are securely met by the end of each key stage.

Through Kapow Primary's Design and technology scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their skills in six key areas:

Mechanisms - Structures - Textiles - Cooking and nutrition (Food) - Electrical systems KS2) - Digital world (KS2)

Each of our key areas follows the design process (design, make and evaluate) and has a particular theme and focus from the technical knowledge or cooking and nutrition section of the curriculum. The Kapow Primary scheme is a spiral curriculum, with key areas revisited again and again with increasing complexity, allowing pupils to revisit and build on their previous learning.

Lessons incorporate a range of teaching strategies from independent tasks, paired and group work including practical hands-on, computer-based and inventive tasks. This variety means that lessons are engaging and appeal to those with a variety of learning styles. Differentiated guidance is available for every lesson to ensure that lessons can be accessed by all pupils and opportunities to stretch pupils' learning are available when required. Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.

Strong subject knowledge is vital for staff to be able to deliver a highly effective and robust Design and Technology curriculum. Each unit of lessons includes multiple teacher videos to develop subject knowledge and support ongoing CPD. Kapow has been created with the understanding that many teachers do not feel confident delivering the full Design and technology curriculum and every effort has been made to ensure that they feel supported to deliver lessons of a high standard that ensure pupil progression.

## Impact

The impact of Kapow Primary's scheme can be constantly monitored through both formative and summative assessment opportunities. Each lesson includes guidance to support teachers in assessing pupils against the learning objectives. Furthermore, each unit has a unit quiz and knowledge catcher which can be used at the start and/ or end of the unit.

After the implementation of Kapow Primary Design and technology, pupils should leave school equipped with a range of skills to enable them to succeed in their secondary education and be innovative and resourceful members of society. The expected impact of following the Kapow Primary Design and technology scheme of work is that children will:

- Understand the functional and aesthetic properties of a range of materials and resources.
- Understand how to use and combine tools to carry out different processes for shaping, decorating, and manufacturing products.
- Build and apply a repertoire of skills, knowledge and understanding to produce high quality, innovative outcomes, including models, prototypes, CAD, and products to fulfill the needs of users, clients, and scenarios.

- Understand and apply the principles of healthy eating, diets, and recipes, including key processes, food groups and cooking equipment.
- Have an appreciation for key individuals, inventions, and events in history and of today that impact our world.
- Recognise where our decisions can impact the wider world in terms of community, social and environmental issues.
- Self-evaluate and reflect on learning at different stages and identify areas to improve.
- Meet the end of key stage expectations outlined in the National curriculum for Design and technology.
- Meet the end of key stage expectations outlined in the National curriculum for Computing.








## National Curriculum Design Technology Statement 2014

### 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

### Assessment

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.

# National Curriculum 2014 Key Stage 1 Design Technology

**Subject Content**

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.

**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 nutritionally now and in later life.

## **Statutory Learning Intentions -** pupils should be taught about:

**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 (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

**Cooking and Nutrition:**

- Use the basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from

| | Autumn | Spring | Summer | DT |
|---|---|---|---|---|
| **KS1** | | | | |
| Year **A** | <u>Structures (5)</u><br>Baby Bears Chair<br><br><u>Textiles (4)</u><br>Puppets | <u>Mechanisms (4)</u><br>Moving Storybook/Moving Picture | <u>Mechanisms (5)</u><br>Wheels and axles | <u>Cooking and Nutrition (6)</u><br>Smoothies |
| Year **B** | <u>Structures (5)</u><br>Stable Structures<br><br><u>Textiles (4)</u><br>Pouches | <u>Mechanisms (4)</u><br>Making a moving monster | <u>Mechanisms (5)</u><br>Fairground wheel | <u>Cooking and Nutrition (6)</u><br>Balanced Diet |

# National Curriculum 2014 Key Stage 2 DT

**Subject Content**

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].

**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.

## **Statutory Learning Intentions -** pupils should be taught about:

**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 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
- understand and use electrical systems in their products
- apply their understanding of computing to program, monitor and control their products.

**Cooking and Nutrition**

- 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.

| | Autumn | Spring | Summer | DT |
|---|---|---|---|---|
| **LKS2** | | | | |
| Year **A** | <u>Structures (5)</u><br>Product packaging<br><br><u>Textiles (4)</u><br>Egyptian Collars | <u>Mechanisms (5)</u><br>Pneumatic toys | <u>Digital world (5)</u><br>Wearable technology | <u>Cooking and Nutrition (6)</u><br>Eating seasonally |
| Year **B** | <u>Structures (5)</u><br>Helmets<br><br><u>Textiles (4)</u><br>Fastenings | <u>Mechanisms (5)</u><br>Mechanical cars | <u>Digital World (6)</u><br>Mindful moments timer | <u>Cooking and Nutrition (5)</u><br>Adapting a recipe<br><br><u>Electrical systems (5)</u><br>Exploring electrical products |

| | Autumn | Spring | Summer | DT |
|---|---|---|---|---|
| **UKS2** | | | | |
| Year **A** | <u>Structures (5)</u><br>Bridges<br><br><u>Electrical Systems (5)</u><br>Wobble Bots | <u>Mechanical systems (5)</u><br>Gears and pulleys | <u>Digital world (4)</u><br>Monitoring devices<br><br><u>Textiles (4)</u><br>Stuffed toys | <u>Cooking and Nutrition (6)</u><br>Developing a recipe |
| Year **B** | <u>Structures (5)</u><br>Playgrounds<br><br><u>Electrical Systems (4)</u><br>Steady hand game | <u>Mechanical systems (4)</u><br>Automata toys | <u>Digital world (5)</u><br>Navigating the world<br><br><u>Textiles (5)</u><br>Bags | <u>Cooking and Nutrition (6)</u><br>Come dine with me |

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