Design and technology

Long-term plan

Mixed-age

This document organises our units into a two year cycle to support those teaching mixed-age classes in covering the KS1 and KS2 National Curriculum objectives.

This document is regularly updated to reflect changes in our content and the most recent version can always be found here.

This version was created on 19.08.22

Contents:

How does Kapow Primary's scheme of work align with the national curriculum?

Our scheme of work fulfils the statutory requirements outlined in the **national curriculum (2014)**. The national curriculum Programme of study for Design and technology aims to ensure that all pupils:

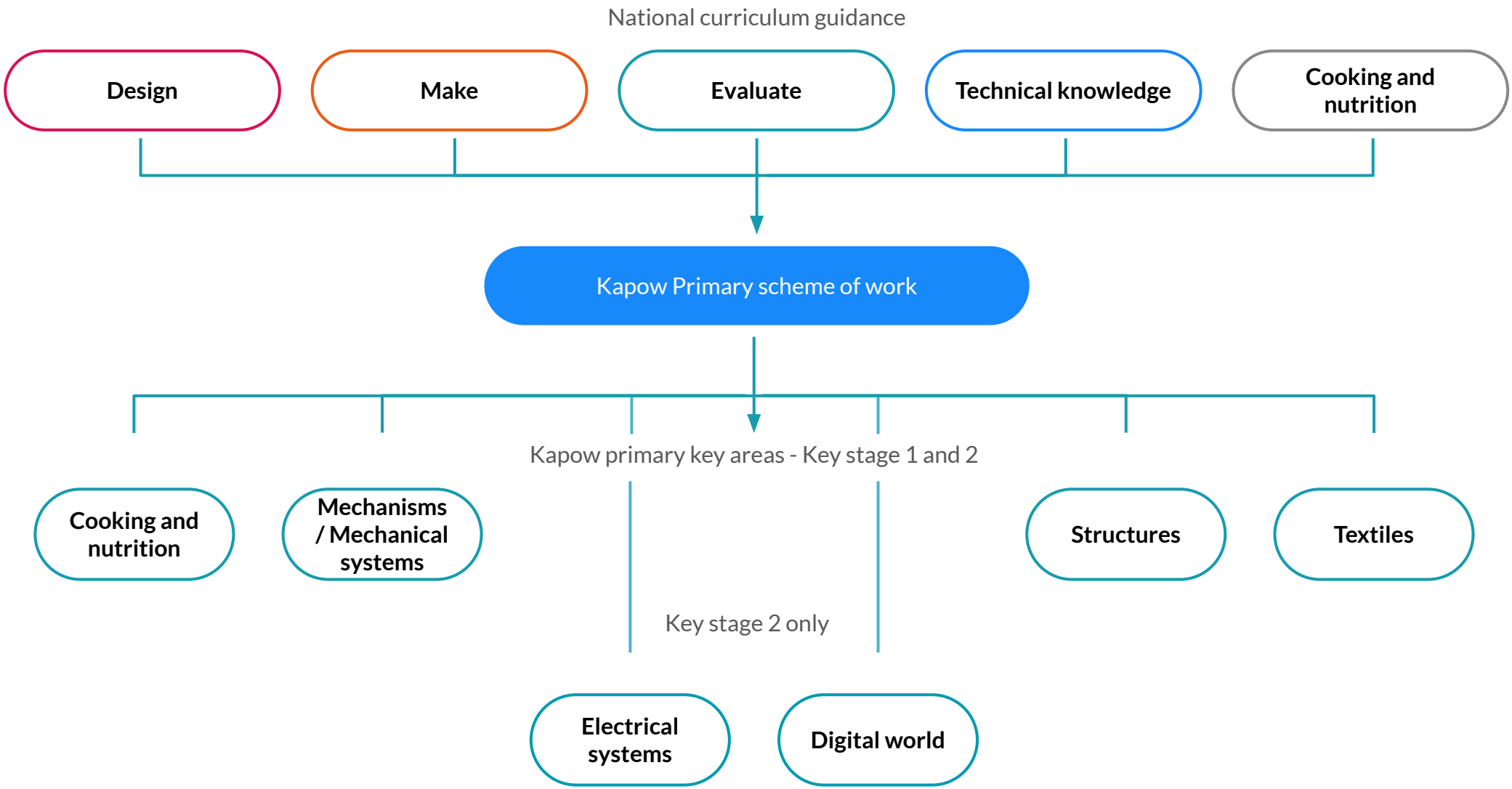
- ★ Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.
- ★ Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes 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.

We have identified five key strands which run throughout our scheme of work:

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

Our National curriculum mapping document shows which of our units cover each of the national curriculum attainment targets as well as each of the five key areas. Each lesson plan references the relevant national curriculum objectives, along with cross-curricular links to any other subjects.

How is the Design and technology scheme of work organised?



Key areas

The six key areas are revisited each year, with Electrical systems and Digital world beginning in KS2. The areas enable all subject leads, specialists or non-specialists, to understand and make it easy for teachers to see prior and future learning for your pupils. You can see, at a glance, how the unit you are teaching fits into their wider learning journey.

Key Stage 1 and 2

Cooking and nutrition

Where food comes from, balanced diet, preparation and cooking skills. Kitchen hygiene and safety. Following recipes.

Mechanisms/ Mechanical systems

Mimic natural movements using mechanisms such as cams, followers, levers and sliders.

Structures

Material functional and aesthetic properties, strength and stability, stiffen and reinforce structures.

Textiles

Fastening, sewing, decorative and functional fabric techniques including cross stitch, blanket stitch and appliqué.

Key Stage 2

Electrical systems

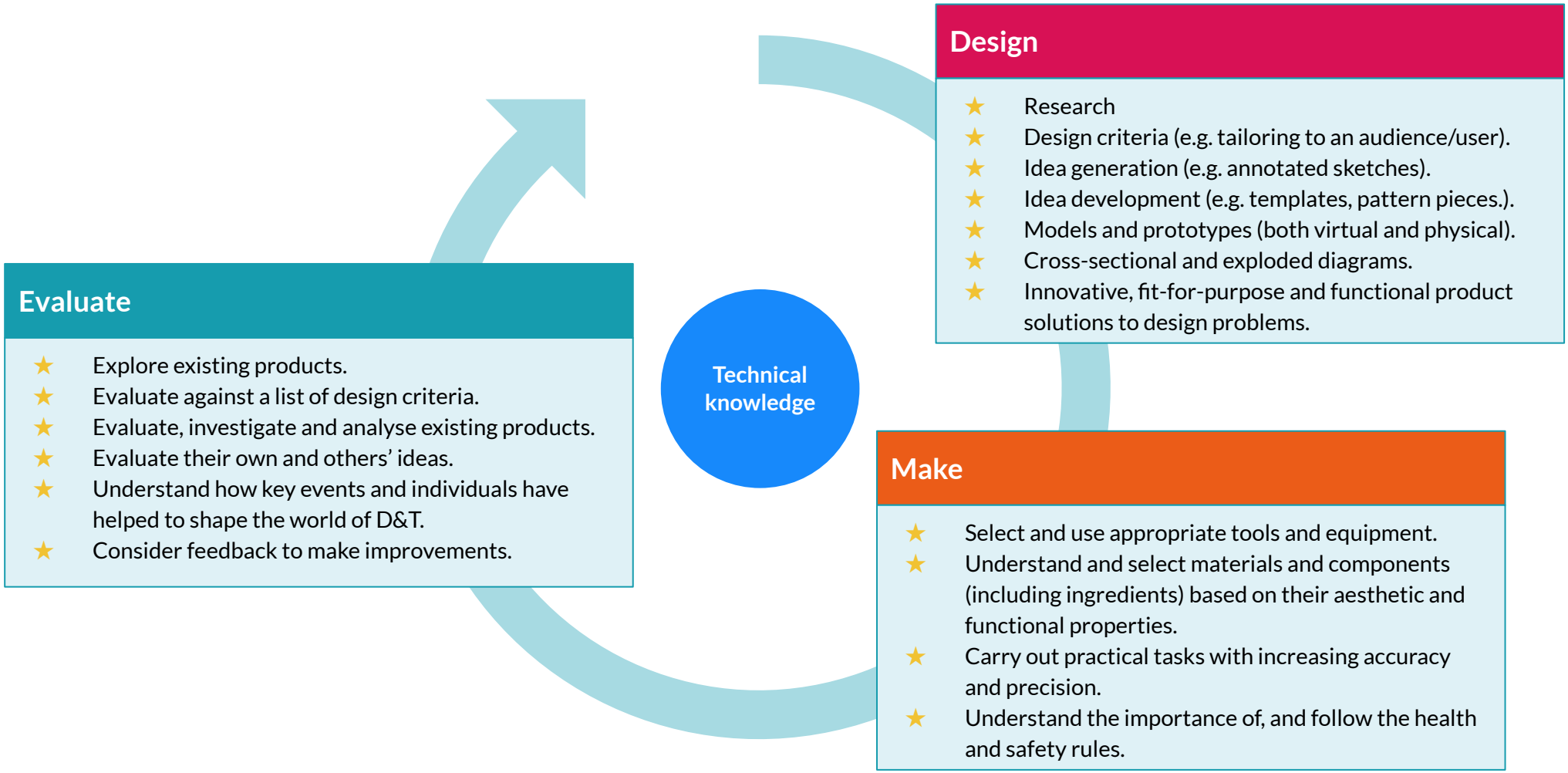
Operational series circuits, circuit components, circuit diagrams and symbols, combined to create various electrical products.

Digital world

Program products to monitor and control, develop designs and virtual models using 2D and 3D CAD software.

The design process

The Design and technology national curriculum outlines the three main stages of the design process: design, make and evaluate. Each Kapow Primary unit follows these stages, to form a full project. 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 in the D&T National Curriculum, with additional focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality. Food units still follow the design process summarised above, for example by tasking the pupils to develop recipes for a specific set of requirements (design criteria) and to suggest methods of packaging the food product including the nutritional information.

How does Kapow Primary help our school to meet statutory guidance for D&T?

Each of our key areas links to the technical knowledge section of the Design and technology National Curriculum ***or*** reinforces principles learnt through exploring various methods and techniques. From KS1 to KS2, the technical knowledge descriptors build upon prior learning and/or introduce new learning.

	Structures	Mechanisms	Textiles	Electrical systems	Digital world	Cooking and nutrition
KS1	Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error.	Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs. Recognise where mechanisms such as these exist in toys and other familiar products.	Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique.	**KS2 only*** Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors. Consider how the materials used in these products can: • Protect the circuitry. • Reflect light. • Conduct electricity. • Insulate.	**KS2 only*** Learn how to develop an electronic product with processing capabilities. Apply Computing principles to program functions within a product including to control and monitor it. Understand how the history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today.	Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals.
KS2	Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs. Understand material selection and learn methods to reinforce structures.	**Mechanical systems** Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers.	Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their: • Strength. • Appropriate use. • Design.			Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods. Understand what is meant by seasonal foods. Know where and how ingredients are sourced.

A spiral curriculum

The scheme of work has been designed as a spiral curriculum with the following key principles in mind:

- ✓ **Cyclical**: Pupils return to the key areas again and again during their time in primary school.
- ✓ **Increasing depth**: Each time a key area is revisited it is covered with greater complexity.
- ✓ **Prior knowledge**: Upon returning to each key area, prior knowledge is utilised so pupils can build upon previous foundations, rather than starting again.

Is there any flexibility in the Kapow Primary Design and technology scheme?

Our Design and technology scheme of work is organised into units of four lessons.

Within each unit, lessons must be taught in order as they build upon each other.

Across a single year group, units themselves do not need to be taught in the suggested order.

The flexibility in the order allows schools to adapt the planning to suit their school and to make use of cross-curricular links available.

The suggested order in these long term plans takes account of the limited resources which may be available in school. Therefore the key strands have been distributed across the year so that all year groups are not requiring the same tools and equipment at the same time.

Other useful documentation:

There are a number of key and essential documents that can support you in planning and approaching our **Design and technology** scheme of work.

✓ **Progression of skills document - Mixed age**

- Shows how understanding and application of key knowledge and skills builds year on year.

✓ **Knowledge organisers**

- Each unit has a knowledge organiser to support pupils in retaining the knowledge covered in the unit.

✓ **Approaching the new Digital world units *to program, monitor and control products***

✓ **Design and technology resource and costings sheet**

✓ **Intent, Implementation, Impact statement**

✓ **Risk assessments**

Suggested long-term plan: Design and technology - Outline (Mixed-age cycle)

Cycle A				Cycle B		
Year 1/2	Year 3/4	Year 5/6		Year 1/2	Year 3/4	Year 5/6
Food: Fruit and vegetables (4 lessons)	Mechanical systems: Pneumatic toys (4 lessons)	Textiles: Stuffed Toys (4 lessons)	Autumn 1	Food: A balanced diet (4 lessons)	Mechanical systems: Making a slingshot car (4 lessons)	Textiles: Waistcoats (4 lessons)
Mechanisms: Making a moving story book (4 lessons)	Digital world: Electronic charm (4 lessons)	Electrical systems: Doodlers (4 lessons)	Autumn 2	Mechanisms: Making a moving monster (4 lessons)	Digital world: Mindful moments timer (4 lessons)	Electrical systems: Steady hand game (4 lessons)
Structures: Constructing a windmill (4 lessons)	Food: Eating seasonally (4 lessons)	Structures: Bridges (4 lessons)	Spring 1	Structures: Baby bear's chair (4 lessons)	Food: Adapting a recipe (4 lessons)	Structure: Playgrounds (4 lessons)
Textiles: Puppets (4 lessons)	Structures: Constructing a castle (4 lessons)	Digital world: Monitoring devices (4 lessons)	Spring 2	Textiles: Pouches (4 lessons)	Structures: Pavilions (4 lessons)	Digital world: Navigating the world (5 lessons) NB. Lesson 5 could be an assembly opportunity
Mechanisms: Wheels and axles (4 lessons)	**Cross stitch and appliqué** Textiles: Cushions or Egyptian collars (4 lessons)	Food: What could be healthier? (4 lessons)	Summer 1	Mechanisms: Fairground wheel (4 lessons)	Textiles: Fastenings (4 lessons)	Food: Come dine with me (4 lessons)
Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges	Electrical systems: Electric poster (4 lessons)	Mechanical systems: Making a pop-up book (4 lessons)	Summer 2	Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges	Electrical systems: Torches (4 lessons)	Mechanical systems: Automata toys (4 lessons)

This page shows recent updates that have been made to this document.

Date	Update
08.06.22	Y5 *Doodlers* unit replaces *Electronic greetings card* unit p. 10
19.08.22	Added new alternative Year 3 Textiles: Egyptian collars unit p. 10