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 18.12.24

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:

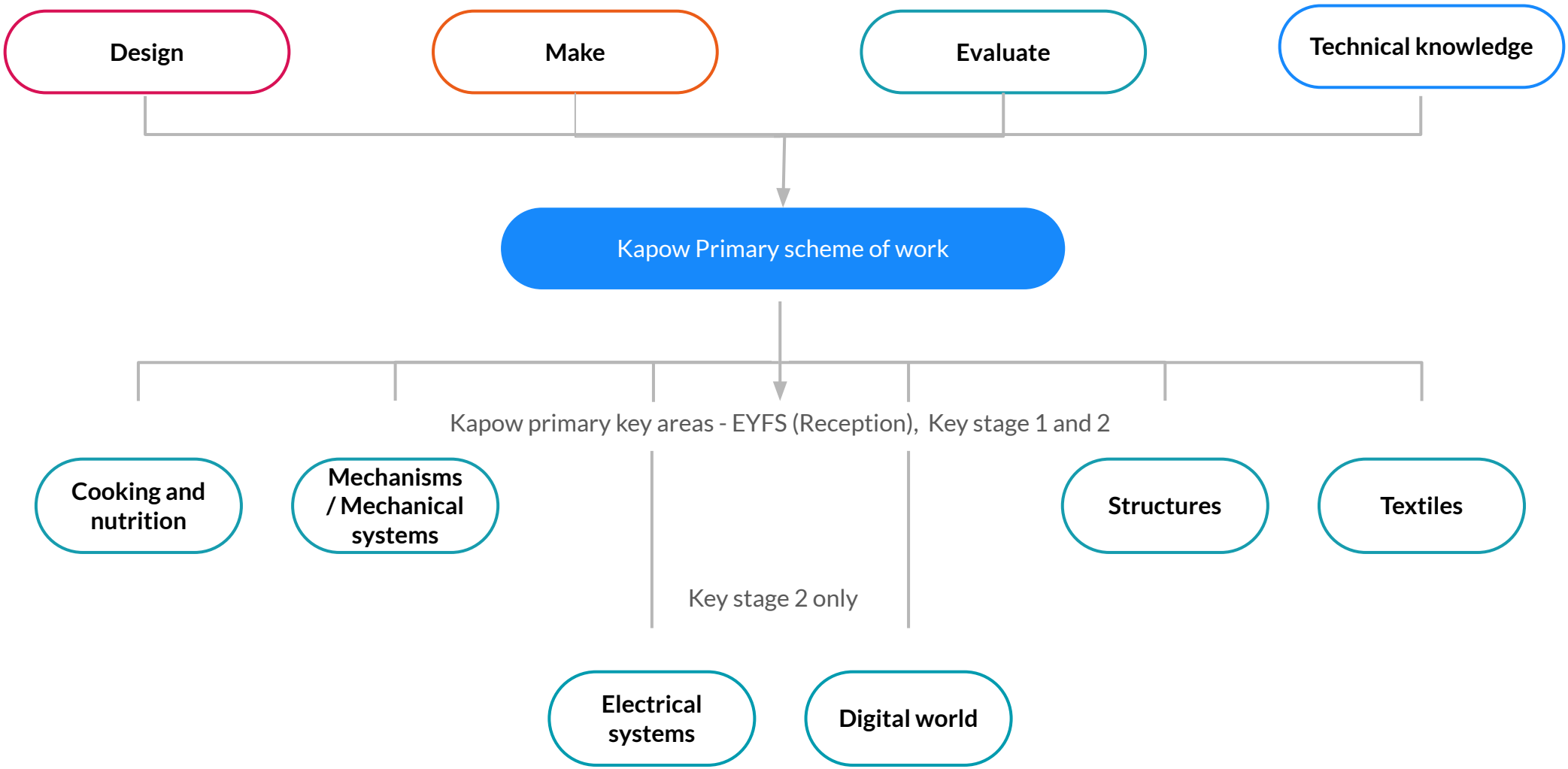
- ★ develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world.
- ★ build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes 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.
  (*This aim is linked to the four strands, but is primarily met by teaching units from our Cooking and nutrition key area)

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

- **Design**
- **Make**
- **Evaluate**
- **Technical knowledge**

Our D&T: National curriculum overview document shows which of our units cover each of the National curriculum attainment targets and strands above. Each lesson plan references the relevant National curriculum objectives, along with cross-curricular links to any other subjects. For EYFS (Reception) links are made to Development matters and the Early Learning Goals.

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.

EYFS (Reception) 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.

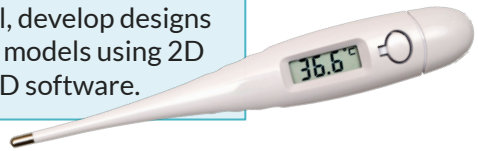
Key Stage 2

Electrical systems

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

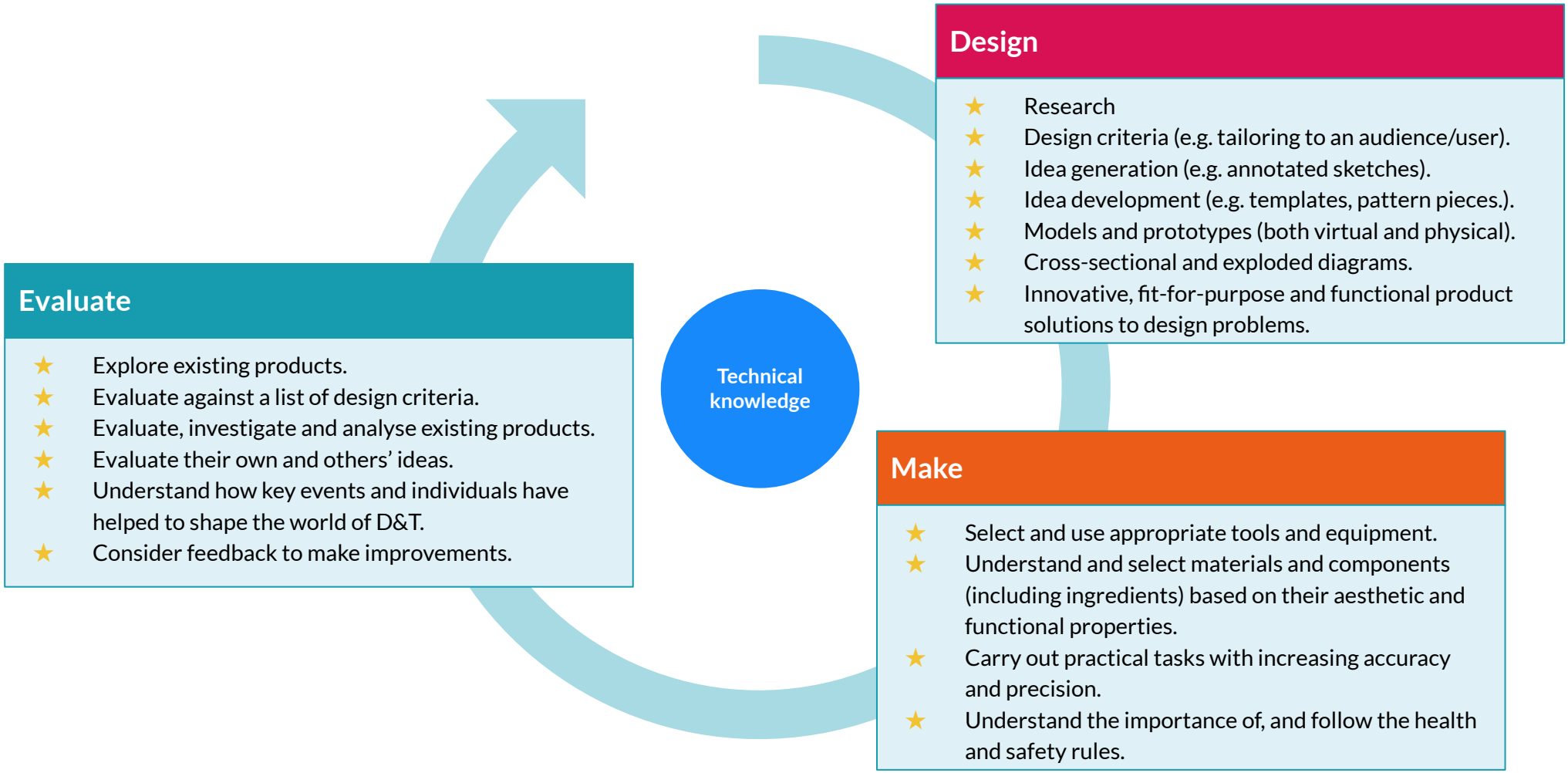
Digital world

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. Cooking and nutrition 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.

Oracy in Design and technology

‘Oracy is the ability to speak eloquently, to articulate ideas and thoughts, to influence through talking, to collaborate with peers and to express views confidently and appropriately.

Oracy refers both to the development of speaking and listening skills, and the effective use of spoken language in teaching and learning. It is to speech what literacy is to reading and writing, and numeracy is to Maths.’

Speak for Change: Final report and recommendations from the Oracy All-Party Parliamentary Group Inquiry.

Learning *through* talk

At Kapow Primary, we believe it's crucial to provide pupils with opportunities for exploratory talk during their learning. This involves thinking aloud, questioning, discussing, and collaboratively building ideas.

Learning *to* talk

Similarly, developing oracy skills is essential for pupils to express and articulate themselves effectively across various contexts and settings, including formal ones like public speaking, debates, and interviews.

Through our Design and technology curriculum, pupils have opportunities to develop their oracy skills by:

- Presenting their design ideas or products to audiences of different sizes.
- Explaining designs, preferences or final products.
- Role-playing from the point of view of the user.
- Discussing products and design ideas using new vocabulary.
- Collaborating by organising tasks within a group.
- Critiquing others’ designs and products.
- Reflecting on and responding to feedback towards their own designs and products.
- Summarising design ideas.

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 or six 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.

Design and technology in EYFS (reception)

Child-led learning is integral to the Early Years curriculum, and rightly so. Supporting children in following and exploring their own interests allows for a greater depth of learning and understanding and much higher levels of wellbeing and engagement.

Adults in the classroom can model how to use Design and technology to aid children in their pursuits and scaffold the learning so that they can reach a deeper level of understanding.

We know that the difficulty with child-led Design and technology projects often arises when the pupils are not equipped to properly plan their creation or execute their ideas in the way that they wish, sometimes meaning that they will spend a very short amount of time at the workshop or junk modelling area before moving on.

Planning, designing, making and developing skills and knowledge are all fundamental parts of our Design and technology scheme. As you work through our EYFS reception units, children will have plenty of opportunities to get to know each of these areas, as they explore different materials, processes and outcomes.

When pupils are accessing these areas outside of lesson times, it is your job to support and scaffold their learning, offering suggestions or listening to their ideas. Rather than creating artificial learning opportunities during these times of child-led play, instead wait until you observe that a child or group of children have shown a particular interest in a topic. Offer to help them enhance their chosen area of exploration by providing additional resources, demonstrating how to use existing resources or even using the computer.

To learn more please see our Teacher guide: D&T and Continuous Provision.

Other useful documentation:

There are a number of essential documents that can support you in planning and approaching our **Design and technology** scheme of work and they can be found on our Subject planning page

- ✓ Progression of knowledge and skills document - mixed-age
- ✓ National curriculum coverage
- ✓ Knowledge organisers
- ✓ Approaching the new Digital world units *to program, monitor and control products*
- ✓ Design and technology resource and costings sheet
- ✓ Equipment list
- ✓ Personal development, SMSC and British values mapping
- ✓ Intent, Implementation, Impact statement

See Design and technology in EYFS (Reception) for more information.

	Unit 1	Unit 2	Unit 3	Unit 4	
EYFS (Reception)	**Structures**	**Cooking and nutrition**	**Textiles**	**Structures**	
	Junk modelling	Soup	Bookmarks	Boats	
	Autumn lesson	**Christmas lesson**	**Spring lesson**	**Easter lesson**	**Summer lessons**
	Hibernation box	Sliding picture	Flower threading	Hanging decoration	Designing a rainbow salad *and* Making a rainbow salad

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
Mechanisms: Making a moving story book (4 lessons)	Option 1: *New* Mechanical systems: Pneumatic toys (5 lessons) Option 2: Mechanical systems: Pneumatic toys (4 lessons)	Textiles: Stuffed Toys (4 lessons)	Autumn 1	Balanced diet (6 lessons)	**Mechanical systems option 1: Mechanical cars** (5 lessons) **Mechanical systems option 2: Making a slingshot car** (4 lessons)	Textiles: Waistcoats (4 lessons)
Structures: Constructing a windmill (4 lessons)	Digital world: Wearable technology (6 lessons)	Electrical systems: Doodlers (4 lessons)	Autumn 2	Mechanisms: Making a moving monster (4 lessons)	Digital world: Mindful moments timer (6 lessons)	Electrical systems: Steady hand game (4 lessons)
Textiles: Puppets (4 lessons)	Eating seasonally (6 lessons)	Structures: Bridges (4 lessons)	Spring 1	Structures: Baby bear's chair (4 lessons)	Adapting a recipe (6 lessons)	Structure: Playgrounds (4 lessons)
Option 1: *New* Mechanisms: Wheels and axles (5 lessons) Option 2: Mechanisms: Wheels and axles (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
Smoothies (6 lessons)	**Cross stitch and appliqué** Textiles: Cushions or Egyptian collars (4 lessons)	Developing a recipe (6 lessons)	Summer 1	Mechanisms: Fairground wheel (5 lessons)	Textiles: Fastenings (4 lessons)	Come dine with me (6 lessons)
Use this time to: ★ Extend projects ★ Attend trips ★ Celebrate (gallery) ★ Set challenges	Electrical systems: Electric poster (4 lessons)	Mechanical systems option 1: Gears and pulleys (5 lessons) Mechanical systems option 2: 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
20.03.23	Changed key area title from 'Food' to 'Cooking and nutrition' and removed 'Cooking and nutrition as a strand.
28.03.23	Updated Year 3 unit from 'Electronic charm' to 'Wearable technology' (p. 10) and to six lessons. Updated Year 4 unit 'Mindful moments timer' to six lessons (p.10). Changed the order of the Year 1/2 Cycle A units to reflect the Long-term plan (p.10).
28.09.23	Added information about EYFS: Reception and our Long-term plan for EYFS: Reception (single year-group).
27.10.23	Cooking and nutrition units have been updated and refreshed to include six lessons.
12.07.24	Added a page on oracy in Design and technology (p.8).
21.08.24	Updated to reflect refreshed units published on the website.
02.09.24	Updated links to reflect new unit published.
18.10.24	Updated links to reflect new unit published.
18.12.24	Updated to reflect refreshed units published on the website.