

Design and Technology



Year 1

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.



Key Stage 2

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.



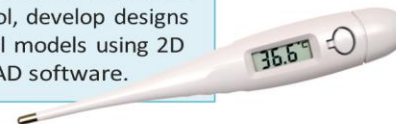
Electrical systems

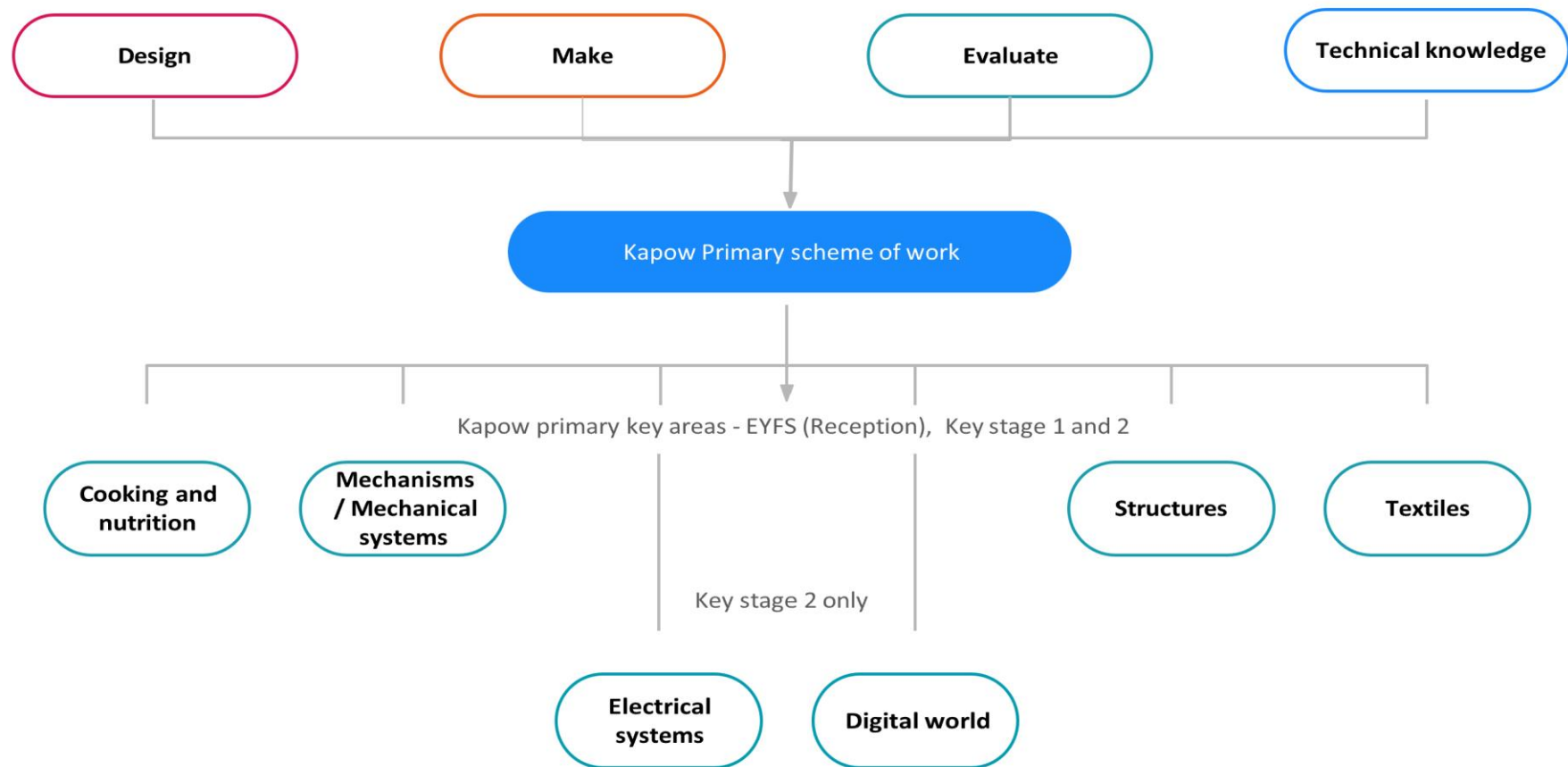
Operational series circuits, circuit components, circuit diagrams and symbols, combined to create various electrical products.



Digital world

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





National Curriculum

Design	Make	Evaluate	Technical Knowledge	Cooking and Nutrition
● Design purposeful, functional, appealing products for themselves and other users based on design criteria ● Generate, develop, model and communicate their ideas through talking,	● Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] ● Select from and use wide range of materials and components, including	● Explore and evaluate a range of existing products ● Evaluate their ideas and products against design criteria.	● 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.	● Use the basic principles of a healthy and varied diet to prepare dishes ● Understand where food comes from.

drawing, templates, mock-ups and, where appropriate, information and communication technology.	construction materials, textiles and ingredients, according to their characteristics			
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Skills Progression

Structure - Constructing a windmill

Skills	Design	• Learning the importance of a clear design criteria. Including individual preferences and requirements in a design.
	Make	• Making stable structures from card, tape and glue. • Learning how to turn 2D nets into 3D structures. • Following instructions to cut and assemble the supporting structure of a windmill. Making functioning turbines and axles which are assembled into a main supporting structure.
	Evaluate	• Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. Suggest points for improvements.

Knowledge	Technical	• To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. To know that a structure is something that has been made and put together.
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	Additional • To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets the clients needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. To know that a windmill is a structure with sails that are moved by the wind • To know the three main parts of a windmill are the turbine, axle and structure.
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Mechanisms / mechanical systems. Making a moving storybook & Wheels and axles.

Skills	Design	Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience.	- Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. - Creating clearly labelled drawings that illustrate movement.
	Make	Following a design to create moving models that use levers and sliders.	- Adapting mechanisms, when: - they do not work as they should. - to fit their vehicle design. - to improve how they work after testing their vehicle.
	Evaluate	Testing a finished product, seeing whether it moves as planned and if	Testing wheel and axle mechanisms, identifying what stops the wheels from turning.

		not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience.	and recognising that a wheel needs an axle in order to move.
Knowledge	Technical	• To know that a mechanism is the parts of an object that move together. • To know that a slider mechanism moves an object from side to side. • To know that a slider mechanism has a slider, slots, guides and an object. To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.	• To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle. To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced.

	Additional	• To know that in Design and technology we call a plan a 'design'.	• To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.
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Cooking and Nutrition

Fruit and Vegetables

Skills	Design	• Designing smoothie carton packaging by-hand or on ICT software.
	Make	Chopping fruit and vegetables safely to make a smoothie.
	Evaluate	• Tasting and evaluating different food combinations. • Describing appearance, smell and taste. Suggesting information to be included on packaging.
Knowledge	Technical	• Understanding the difference between fruits and vegetables.

		• To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds and a vegetable does not. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).
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	Additional	
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Textiles

Puppets

Skills	Design	• Using a template to create a design for a puppet.
	Make	• Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. Sequencing steps for construction.
	Evaluate	Reflecting on a finished product, explaining likes and dislikes.

Knowledge	Technical	• To know that 'joining technique' means connecting two pieces of material together. • To know that there are various temporary methods of joining fabric by using staples, glue or pins. • To understand that different techniques for joining materials can be used for different purposes. • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. To know that drawing a design idea is useful to see how an idea will look.
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	Additional	
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All information taken directly from Kapow.