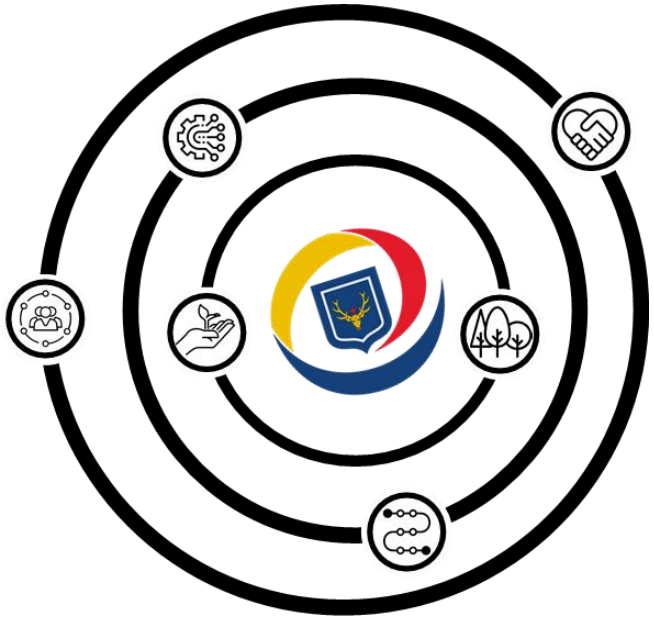
OUR LADY AND ST. HUBERT'S PRIMARY

Design and Technology Knowledge and Skills Progression (Adapted from Kapow)



At Our Lady and St. Hubert's, home, school and parish work together, knowing that God is with us in all we do.

OUR LADY AND ST HUBERT'S CATHOLIC PRIMARY SCHOOL

Contents

Design and Technology Curriculum Intent

The Design and technology scheme of work 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. We link our learning in Design and technology to our 6Cs – 21st century learning skills of creativity, communication, critical thinking, collaboration, character and citizenship. We believe that Design and Technology is the perfect subject to explore our 6Cs further, developing learners and problem solvers of the future. Our Design and technology scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum within EYFS, units provide opportunities for pupils' to work towards the Early Learning Goals and Development matters statements.

At Our Lady and St Hubert's, we aim to promote a love of learning and create opportunities for children in the wider world. Our Design and technology curriculum, allows children to be inspired by engineers, designers, chefs and architects to enable them to create a range of structures, mechanisms, textiles, electrical systems and food products with a real life purpose. In line with the school aims, we believe that technology should develop lively and enquiring minds through the ability to question, argue rationally, investigate and process information.

Implementation of the Design and Technology Curriculum

In order to be able to realise the intent of our curriculum we believe that students will need to learn in a way that allows them to experiment and take risks, in a safe and positive learning environment. This is achieved through imaginative teaching that will embrace and engage new technologies and link to the children's world. At the heart of this, is the desire to deliver a curriculum in which children express creativity through their designs and produce high quality outcomes. We approach all of our learning using Rosenshine's principles to support our pupils to know more and remember more of their curriculum and ensure that learning is secure before they move on to new information or skills. Students will have the opportunities to learn about designers/architects and their work, especially British designers. This will be implemented through teaching children about the 3 main processes of successful design; design, make and evaluate (as set out in the National Curriculum). In technology, the children will be taught the skills to plan, carry out and evaluate a design project. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical, and technical understanding required for each strand. In order to meet the requirements of the National Curriculum for Design and technology and to realise our intent statement, pupils will continually revisit these key strands taught throughout six focus areas:

- Cooking and nutrition
- Mechanisms/ Mechanical systems
- Structures
- Textiles
- Electrical systems (KS2 only)
- Digital world (KS2 only)

This continual revisiting of the key stands (with increasing complexity) of knowledge through our six focus areas, creates a spiral curriculum, allowing knowledge to be both retained and built upon during a child's time at Our Lady and St Hubert's.

Our clear progression of knowledge within these strands and focus areas across each year group, as well as the National Curriculum for Design and Technology can be found below. Our National curriculum overview shows which of our units cover each of the National curriculum attainment targets as well as each of the four strands: National Curriculum Coverage Document.

Our progression shows the knowledge that is taught within each year group and how this develops to ensure that attainment targets are securely met by the end of each key stage. Through the Design and technology scheme, pupils respond to design briefs and scenarios that require consideration of the needs of others, developing their knowledge in the six key areas.

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 all. Work is adapted to suit all children from those who show a greater depth of understanding to those who require further support, including children who have a particular special educational need.

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.

Design and technology is taught on a half termly basis, with teachers seeking opportunities to retrieve information even when it is not being formally taught. Teachers will also look for opportunities to link work from the wider curriculum with design and technology, developing a rich schema of information and reduce the impact of information being lost over time as highlighted by the Ebbinghaus curve.

Impact of the Design and Technology Curriculum

Successful implementation of our design and technology curriculum, will develop students that have a love for the process of designing and making products, who are able to evaluate successfully in order to be more successful. Linked with our 6Cs, children will understand that failure is a pathway to success – they will be able to improvise, adapt and overcome problems. They will understand the importance of this in overcoming problems the world faces and understand the role of the subject and themselves in this process. They will be able to communicate ideas in collaborative processes, developing creative ideas to solve problems.

The impact of our curriculum can be constantly monitored through both formative and summative assessment opportunities. After the implementation of the design and technology curriculum, pupils will 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 is that children will:

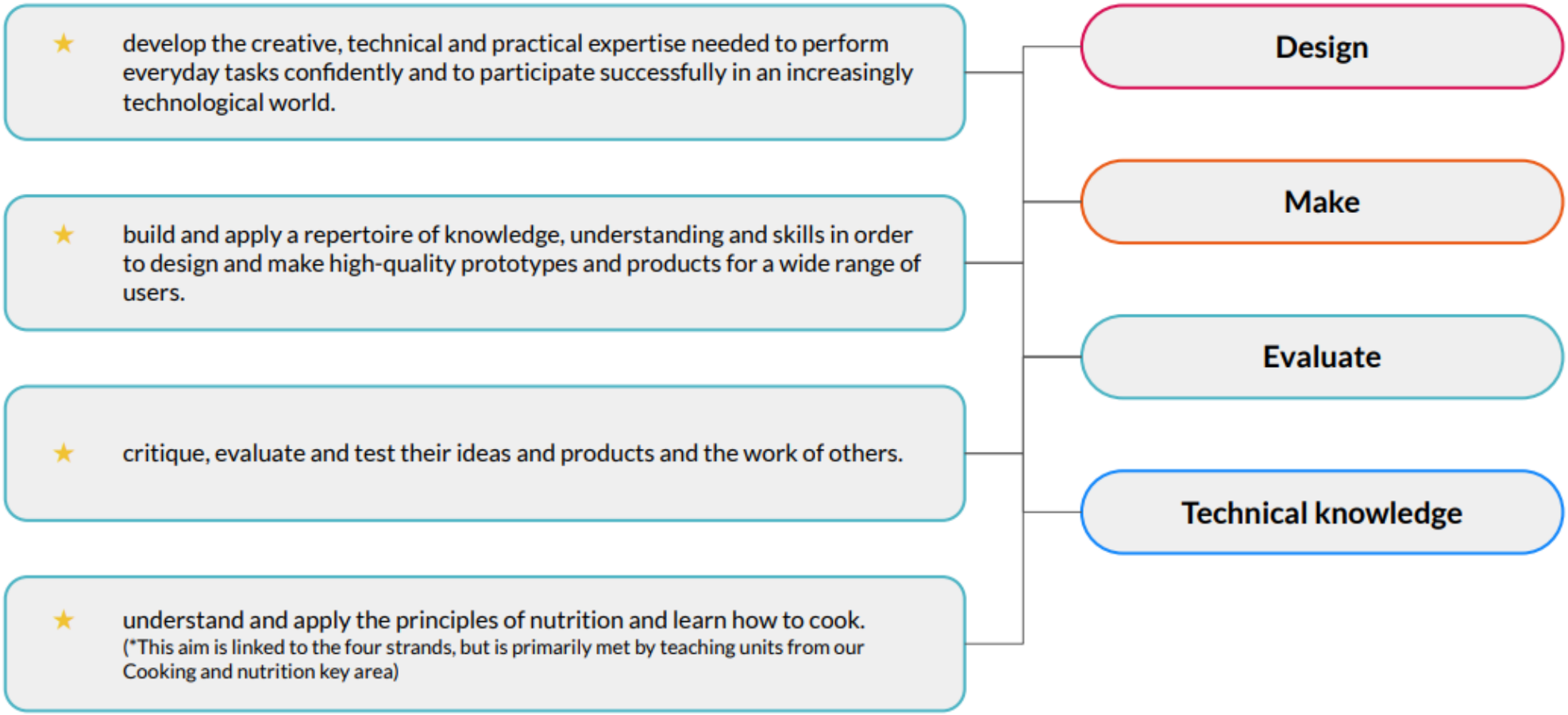
- Understand the functional and aesthetic properties of a range of materials and resources.
- Understand how to use and combine tools to carry out different processes for shaping, decorating, and manufacturing products.
- Build and apply a repertoire of skills, knowledge and understanding to produce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

The National Curriculum for Design and Technology

Main strands of learning- National Curriculum					
	Design	Make	Evaluate	Technical knowledge	Cooking and nutrition
Key Stage 1	-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	-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 a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	-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.
Key Stage 2	-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	-select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], 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	-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	-apply their understanding of how to strengthen, stiffen and reinforce more complex structures -understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] -understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] -apply their understanding of computing to program, monitor and control their products.	-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

How does the scheme of work align with the National Curriculum?

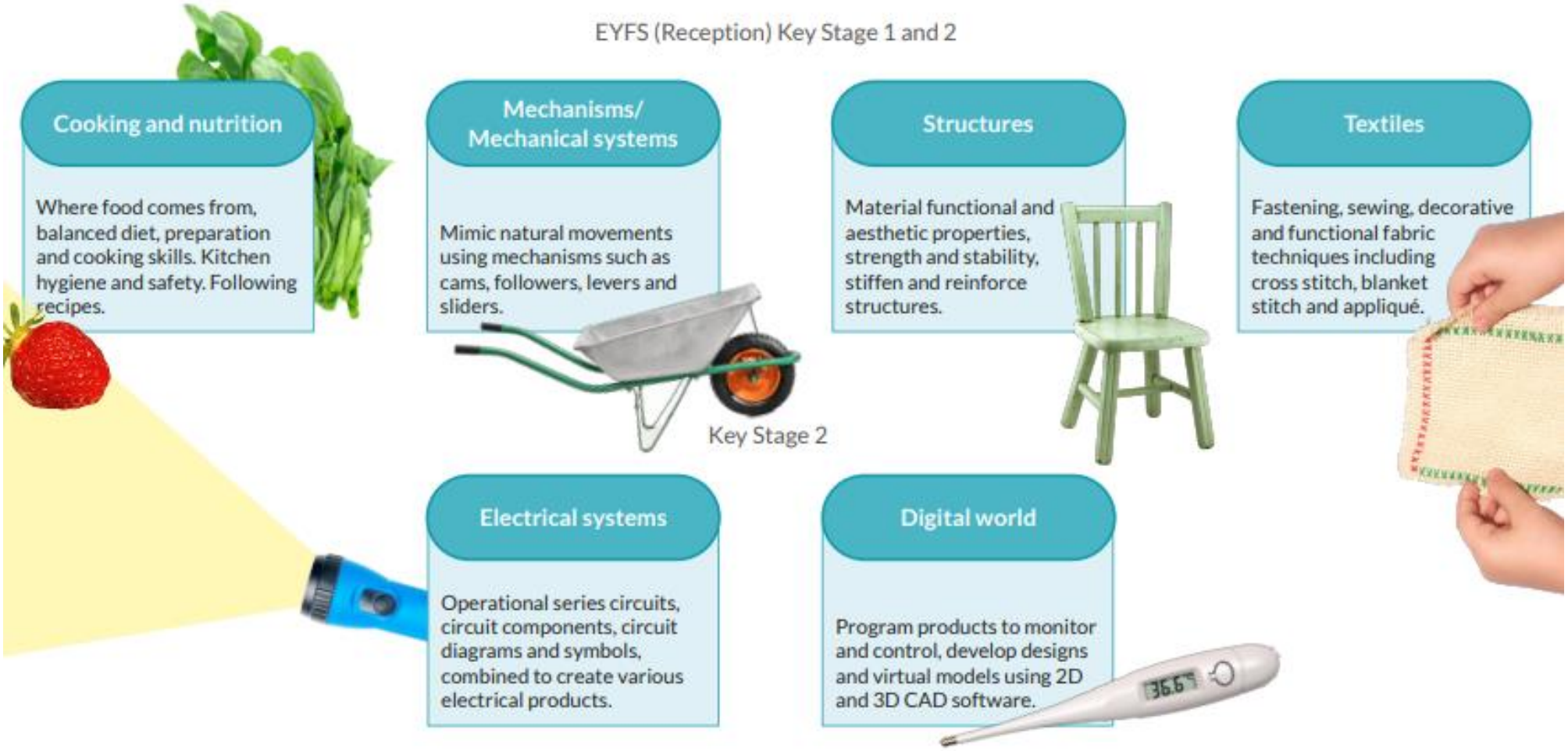
The Kapow scheme of work fulfils the statutory requirements outlined in the national curriculum as set out above. The national curriculum Programme of study for Design and technology aims to ensure that pupils can do a number of key tasks as set out below. We have grouped these key aims into four key strands that run throughout the scheme of work – Design, Make, Evaluate and Technical Knowledge.

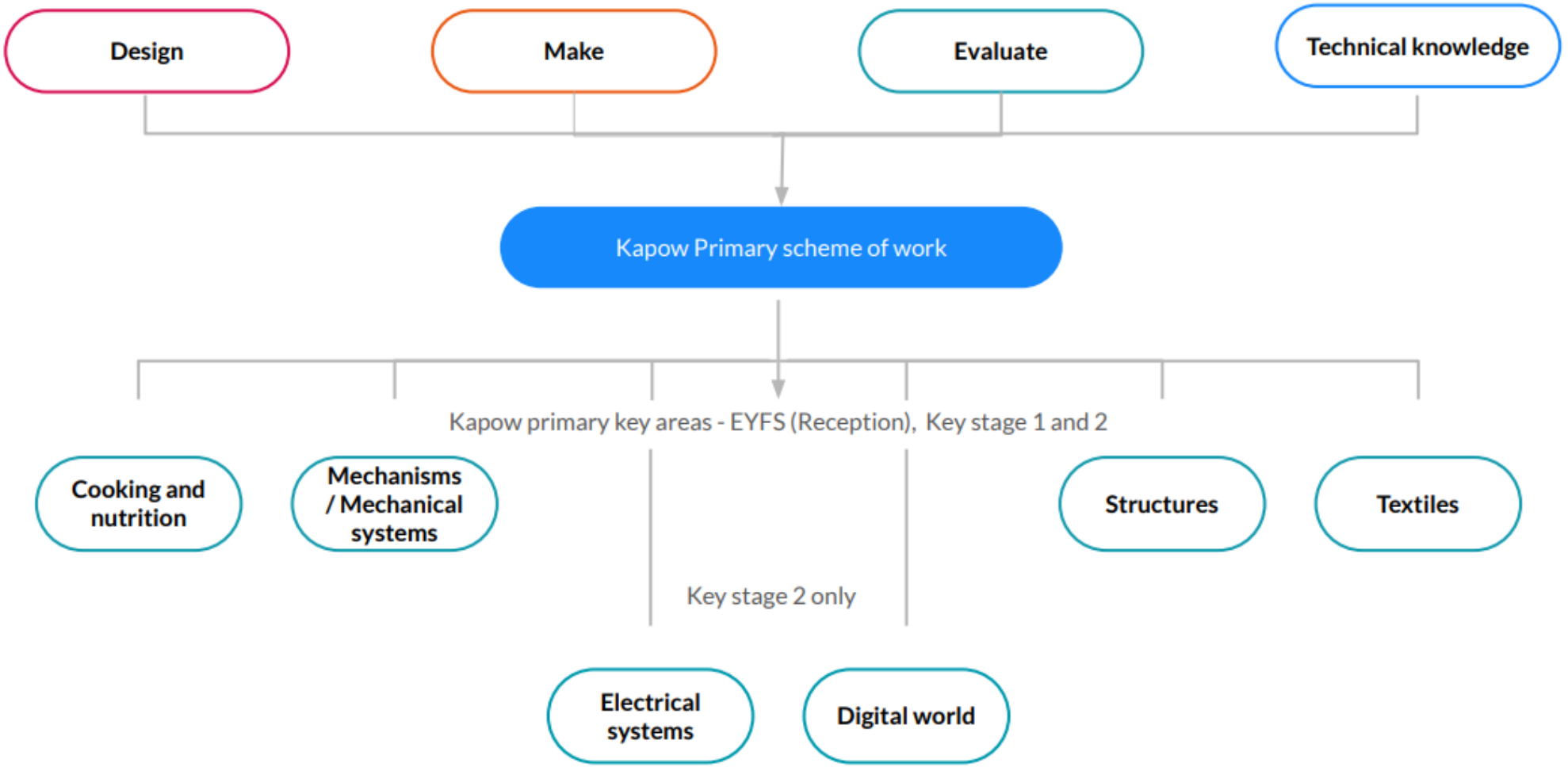


The Kapow DT curriculum coverage document shows which units cover each of the national Curriculum attainment targets and strands above. For EYFS links are made to the early Learning Goals and Development matters. Follow the link above to view more.

How is the scheme of work organised?

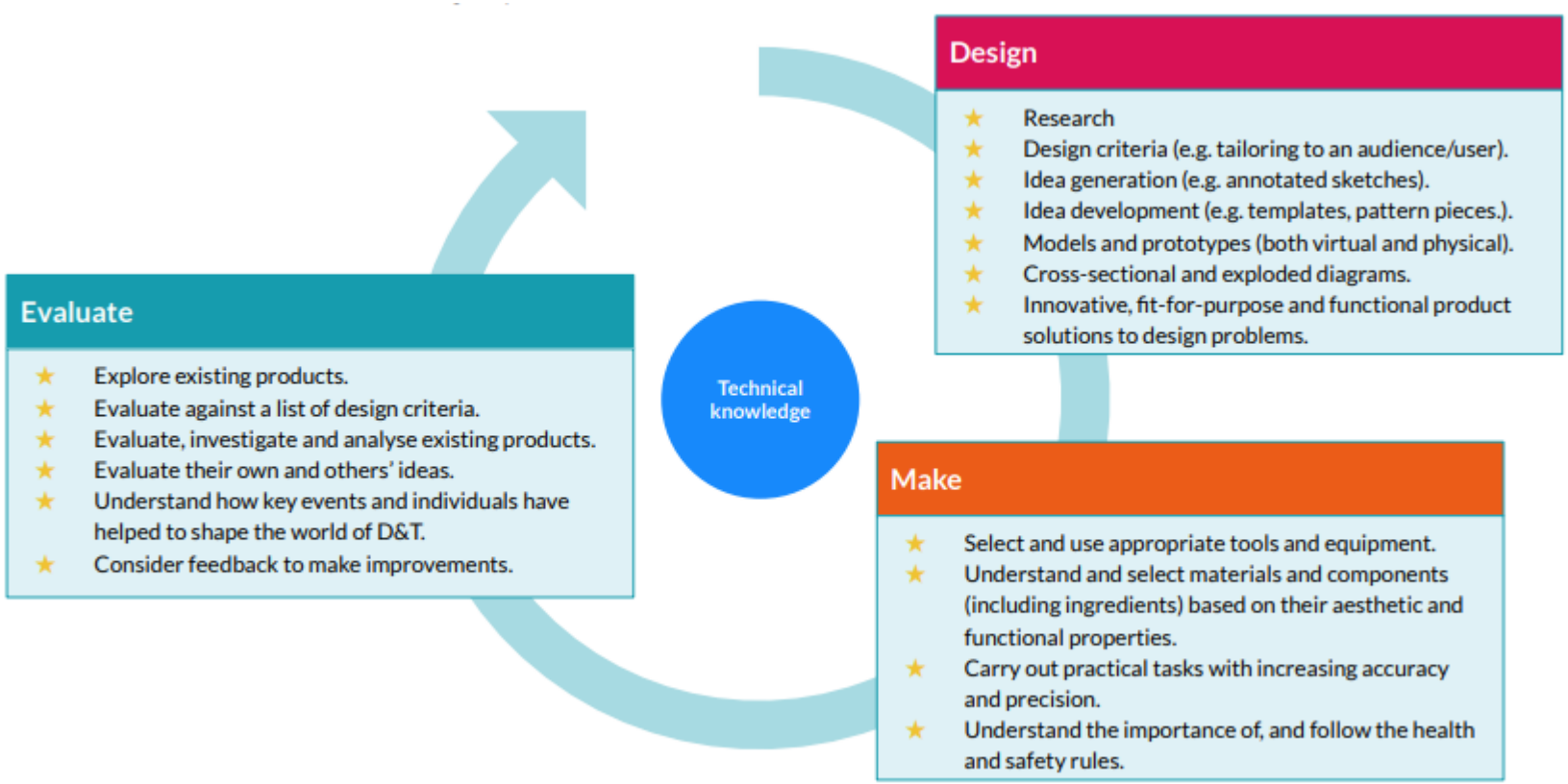
The scheme of work is organized into six key areas – Cooking and nutrition; Mechanisms/Mechanical Systems; Structures; Textiles; Electrical systems, and Digital World, with more information on what is explored in each found below.




Design
Make
Evaluate
Technical knowledge
Kapow Primary scheme of work
Kapow primary key areas - EYFS (Reception), Key stage 1 and 2
Cooking and nutrition
Mechanisms / Mechanical systems
Structures
Textiles
Key stage 2 only
Electrical systems
Digital world

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. We also have our own cooking curriculum – for more information see section below.*

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 strands again and again during their time in primary school.

✓ Increasing depth: Each time the key strand is revisited it is covered with greater complexity.

✓ Prior knowledge: Upon returning to each key strand, prior knowledge is utilised so pupils can build upon previous foundations, rather than starting again.

Within each unit, lessons must be taught in order as they build upon each other. Across a single year group, Kapow state that units themselves do not need to be taught in the suggested order allowing for flexibility. The order in which we teach each unit can be found below in the *Long-Term Overview*.

Long Term Overview

Key

Structures	Textiles	Mechanisms/Mechanical Systems	Cooking and Nutrition	Electrical Systems (KS2 Only)	Digital World (KS2 Only)

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn	Junk Modelling	Constructing Windmills	Fairground Wheels	Cross stitch and applique cushions	Mechanical Cars	Developing a recipe	Playgrounds
			Balanced Diet	Constructing a castle	Fastening	Doodlers	Automata Toys
Spring	Bookmarks	Making a moving storybook	Baby bear's chair	Eating seasonally	Pavillions	Pop-up books	Steady hand game
		Wheels and axles		Wearable technology	Adapting a recipe	Monitoring devices	Navigating the world
Summer	Boats	Smoothies	Moving monsters	Pneumatic Toys	Torches	Bridges	Come dine with me
	Soup	Puppets	Pouches				

Knowledge Progression

	Structures	
	Reception	
Unit	Junk Modelling	Boats
Design	• Making verbal plans and material choices. • Developing a junk model.	• Designing a junk model boat. • Using knowledge from exploration to inform design.
Make	• Improving fine motor/scissor skills with a variety of materials. • Joining materials in a variety of ways (temporary and permanent). • Joining different materials together. • Describing their junk model, and how they intend to put it together.	• Making a boat that floats and is waterproof, considering material choices.
Evaluate	• Giving a verbal evaluation of their own and others' junk models with adult support. • Checking to see if their model matches their plan. • Considering what they would do differently if they were to do it again. • Describing their favourite and least favourite part of their model.	• Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves.
Technical	• To know there are a range to different materials that can be used to make a model and that they are all slightly different. • Making simple suggestions to fix their junk model.	• To know that 'waterproof' materials are those which do not absorb water.
Additional		• To know that some objects float and others sink. • To know the different parts of a boat.

	Year 1	Year 2
Unit	Constructing a windmill	Baby Bear's Chair
Design	• Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design	• Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects.
Make	• Making stable structures from card. • 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. • Finding the middle of an object. • Puncturing holes. • Adding weight to structures. • Creating supporting structures. • Cutting evenly and carefully.	• Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper
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.	• Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.
Technical	• 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. • To know that the sails or blades of a windmill are moved by the wind. • To know that a structure is something built for a reason. • To know that stable structures do not topple. • To know that adding weight to the base of a structure can make it more stable.	• To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily.
Additional	• 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. • To know that windmills are used to generate power and were used for grinding flour.	• To know that natural structures are those found in nature. • To know that man-made structures are those made by people.

	Year 3	Year 4
Unit	Constructing a castle	Pavilions
Design	• Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software.	• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight.
Make	• Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials.	• Creating a range of different shaped frame structures. • Making a variety of free-standing frame structures of different shapes and sizes. • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials.
Evaluate	• Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs.	• Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs.
Technical	• To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures.	• To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own.
Additional	• To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose. • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design speccification is a list of success criteria for a product.	• To know that a pavilion is a decorative building or structure for leisure activities. • To know that cladding can be applied to structures for different effects. • To know that aesthetics are how a product looks. • To know that a product's function means its purpose. • To understand that the target audience means the person or group of people a product is designed for. • To know that architects consider light, shadow and patterns when designing.

	Year 5	Year 6
Unit	Bridges	Playgrounds
Design	• Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation.	• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.
Make	• Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support a load. • Building a wooden bridge structure. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks. • Using the correct techniques to saws safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriating materials is an important part of the design process. • Understanding basic wood functional properties.	• Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures.
Evaluate	• Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others.	• Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure.
Technical	• To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood.	• To know that structures can be strengthened by manipulating materials and shapes.
Additional	• To understand the difference between arch, beam, truss and suspension bridges. • To understand how to carry and use a saw safely.	• To understand what a 'footprint plan' is. • To understand that in the real world, design, can impact users in positive and negative ways. • To know that a prototype is a cheap model to test a design idea.

	Mechanisms/Mechanical Systems	
	Year 1	
Unit	Moving Storybook	Wheels and Axles
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 not, explaining why and how it can be fixed. • Reviewing the success of a product by testing it with its intended audience.	• Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move.
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.

	Year 2	
Unit	Fairground wheel	Making a moving monster
Design	• Conducting simple surveys or discussions to gather opinions on what others need or like in a design. • Knowing that a survey is used to find out what people like. • Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. • Knowing that a design brief helps to decide what to make. • Knowing that design criteria are the steps for making a product successful. • Creating ideas with design criteria in mind. • Referring to specific parts of existing products when generating ideas. • Knowing that the design criteria help when thinking of ideas. • Using labels to explain parts of a design, label materials, etc. • Using labels to explain parts of a design, label materials, etc. • Knowing that drawings can help explain how something works. • Knowing that a label explains part of a drawing.	• Creating a class design criteria for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criteria.
Make	• Choosing materials, ingredients or components from a wider range of materials, ingredients or components. • Explaining their choices based on the properties of materials and components. • Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc. • Following and recalling simple safety instructions. • Knowing that some tools are sharp like scissors and knives. • Choosing known geometric shapes when making. • Beginning to shape objects to improve how they work. • Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere. • Considering balance in their finishing, like evenly spaced decoration.	• Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly.
Evaluate	• Discussing a range of existing products and saying what they like and dislike about them. • Evaluating existing products against design criteria. • Evaluating their ideas and creations against simple design criteria. • Knowing that design criteria help to decide if their product is a success. • Suggesting improvements to their peers' designs and products. • Knowing that improve means to make something better. • Knowing that their suggestions can improve someone else's work.	• Evaluating own designs against design criteria. • Using peer feedback to modify a final design.
Technical	• To know everyday objects have mechanisms. • To know many things that move have parts inside to help them work. • To know mechanisms usually limit unwanted movement. • To know everyday objects utilise wheels and axles. • To know wheels must be able to turn to work effectively. • To know axles allow wheels to turn without falling off.	• To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism. • To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers.

Additional	• To know the features of a fairground wheel include the wheel, frame, pods, a base an axle and an axle holder.	• To know some real-life objects that contain mechanisms.

	Year 3	Year 4
Unit	Pneumatic Toys	Making a Slingshot Car
Design	• Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly.	• Designing a shape that reduces air resistance. • Drawing a net to create a structure from. • Choosing shapes that increase or decrease speed as a result of air resistance. • Personalising a design.
Make	• Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving.	• Measuring, marking, cutting and assembling with increasing accuracy. • Making a model based on a chosen design.
Evaluate	• Using the views of others to improve designs. • Testing and modifying the outcome, suggesting improvements. • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.	• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.
Technical	• To understand how pneumatic systems work. • To understand that pneumatic systems can be used as part of a mechanism. • To know that pneumatic systems operate by drawing in, releasing and compressing air.	• To understand that all moving things have kinetic energy. • To understand that kinetic energy is the energy that something (object/person) has by being in motion. • To know that air resistance is the level of drag on an object as it is forced through the air. • To understand that the shape of a moving object will affect how it moves due to air resistance.
Additional	• To understand how sketches, drawings and diagrams can be used to communicate design ideas. • To know that exploded-diagrams are used to show how different parts of a product fit together. • To know that thumbnail sketches are small drawings to get ideas down on paper quickly.	• To understand that products change and evolve over time. • To know that aesthetics means how an object or product looks in design and technology. • To know that a template is a stencil you can use to help you draw the same shape accurately. • To know that a birds-eye view means a view from a high angle (as if a bird in flight). • To know that graphics are images which are designed to explain or advertise something. • To know that it is important to assess and evaluate design ideas and models against a list of design criteria.

	Year 5	Year 6
Unit	Pop-up book	Automata Toys
Design	• Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book.	• Noticing wider-reaching problems or needs in the community. • Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. • Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.
Make	• Following a design brief to make a pop up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.	• Producing lists of equipment, materials and tools that they need for a task. • Selecting materials, components or ingredients based on research or user needs. • Explaining their choices, referring to their research. • Considering which equipment will work well together. • Choosing from the known range of equipment available to them with little guidance. • Assessing risks associated with different tools and equipment. • Understanding and explaining the importance of each safety rule. • Consistently apply safety instructions. • Cutting jelutong or other harder wood with a coping saw or a tenon saw in small groups. • Cutting in a back-and-forth sawing motion where appropriate. • In supervised groups, using hot glue guns safely. • Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.
Evaluate	• Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement.	• Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. • Providing feedback that is helpful, specific and encouraging. • Incorporating feedback from peers or users to improve their product further, explaining the changes they made and the impact they had.
Technical	• To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms.	• To know that the mechanism in an automata uses a system of cams, axles and followers. • To know that different shaped cams produce different outputs. • To know which mechanisms are working together to make a mechanical system. • To know that there are different directions of movement. • To know that mechanisms can change one type of movement to another.
Additional	• To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	• To know that an automata is a hand powered mechanical toy. • To know that a cross-sectional diagram shows the inner workings of a product.

	Textiles		
	Reception	Year 1	Year 2
Unit	Bookmarks	Puppets	Pouches
Design	• Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials.	• Using a template to create a design for a puppet.	• Designing a pouch.
Make	• Developing fine motor/cutting skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading.	• Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing steps for construction.	• Selecting and cutting fabrics for sewing. • Decorating a pouch using fabric glue or running stitch. • Threading a needle. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. • Neatly pinning and cutting fabric using a template.
Evaluate	• Reflecting on a finished product and comparing to their design.	• Reflecting on a finished product, explaining likes and dislikes.	• Troubleshooting scenarios posed by teacher. • Evaluating the quality of the stitching on others' work. • Discussing as a class, the success of their stitching against the success criteria. • Identifying aspects of their peers' work that they particularly like and why.
Other Knowledge	• To know that a design is a way of planning our idea before we start. • To know that threading is putting one material through an object.	• 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.	• To know that sewing is a method of joining fabric. • To know that different stitches can be used when sewing. • To understand the importance of tying a knot after sewing the final stitch. • To know that a thimble can be used to protect my fingers when sewing.

	Year 3	Year 4
Unit	Cushions	Fastenings
Design	• Designing and making a template from an existing cushion and applying individual design criteria.	• Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve.
Make	• Following design criteria to create a cushion. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with stuffing and sewing the edges	• Making and testing a paper template with accuracy and in keeping with the design criteria. • Measuring, marking and cutting fabric using a paper template. • Selecting a stitch style to join fabric. • Working neatly by sewing small, straight stitches. • Incorporating a fastening to a design.
Evaluate	• Evaluating an end product and thinking of other ways in which to create similar items.	• Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement. • Articulating the advantages and disadvantages of different fastening types.
Other Knowledge	• To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces. • To know that when two edges of fabric have been joined together it is called a seam. • To know that it is important to leave space on the fabric for the seam. • To understand that some products are turned inside out after sewing so the stitching is hidden.	• To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and velcro. • To know that different fastening types are useful for different purposes. • To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions.

	Electrical Systems (KS2)
	Year 4
Unit	Torches
Design	• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.
Make	• Making a torch with a working electrical circuit and switch. • Using appropriate equipment to cut and attach materials. • Assembling a torch according to the design and success criteria.
Evaluate	• Evaluating electrical products. • Testing and evaluating the success of a final product.
Technical	• To understand that electrical conductors are materials which electricity can pass through. • To understand that electrical insulators are materials which electricity cannot pass through. • To know that a battery contains stored electricity that can be used to power products. • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit.
Additional	• To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens. • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.

	Year 5	Year 6
Unit	Doodlers	Steady Hand Game
Design	• Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product. • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user.	• Designing a steady hand game - identifying and naming the components required. • Drawing a design from three different perspectives. • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. • Understanding the purpose of products (toys), including what is meant by fit for purpose' and 'form over function'.
Make	• Altering a product's form and function by tinkering with its configuration. • Making a functional series circuit, incorporating a motor. • Constructing a product with consideration for the design criteria. • Breaking down the construction process into steps so that others can make the product.	• Constructing a stable base for a game. • Accurately cutting, folding and assembling a net. • Decorating the base of the game to a high quality finish. • Making and testing a circuit. • Incorporating a circuit into a base.
Evaluate	• Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses. • Determining which parts of a product affect its function and which parts affect its form. • Analysing whether changes in configuration positively or negatively affect an existing product. • Peer evaluating a set of instructions to build a product.	• Testing own and others finished games, identifying what went well and making suggestions for improvement. • Gathering images and information about existing children's toys. • Analysing a selection of existing children's toys.
Technical	• To know that series circuits only have one direction for the electricity to flow. • To know when there is a break in a series circuit, all components turn off. • To know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. • To know a motorised product is one which uses a motor to function.	• To know that batteries contain acid, which can be dangerous if they leak. • To know the names of the components in a basic series circuit, including a buzzer.
Additional	• To know that product analysis is critiquing the strengths and weaknesses of a product. • To know that 'configuration' means how the parts of a product are arranged.	• To know that 'form' means the shape and appearance of an object. • To know the difference between 'form' and 'function'. • To understand that 'fit for purpose' means that a product works how it should and is easy to use. • To know that form over purpose means that a product looks good but does not work very well. • To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. • To understand the diagram perspectives 'top view', 'side view' and 'back'.

	Digital World (KS2)
	Year 3
Unit	Wearable technology
Design	• Problem solving by suggesting which features on a Micro:bit might be useful and justifying my ideas. • Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge. • Developing design ideas through annotated sketches to create a product concept. • Developing design criteria to respond to a design brief.
Make	• Following a list of design requirements. • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.
Evaluate	• Analysing and evaluating wearable technology. • Using feedback from peers to improve design.
Technical	• To understand that, in programming, a 'loop' is code that repeats something again and again until stopped. • To know that a Micro:bit is a pocket-sized, codeable computer. • To know that a simulator is able to replicate the functions of an existing piece of technology.
Additional	• To know what the 'Digital Revolution' is and features of some of the products that have evolved as a result. • To understand what is meant by 'point of sale display.' • To know that CAD stands for 'Computer-aided design'. • To know what a focus group is by taking part in one.

	Year 5	Year 6
Unit	Monitoring Devices	Navigating the World
Design	• Researching (books, internet) for a particular (user's) animal's needs. • Developing design criteria based on research. • Generating multiple housing ideas using building bricks. • Understanding what a virtual model is and the pros and cons of traditional and CAD modelling. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD.	• Writing a design brief from information submitted by a client. • Developing design criteria to fulfil the client's request. • Considering and suggesting additional functions for my navigation tool. • Developing a product idea through annotated sketches. • Placing and manoeuvring 3D objects, using CAD. • Changing the properties of, or combining one or more 3D objects, using CAD.
Make	• Understanding the functional and aesthetic properties of plastics. • Programming to monitor the ambient temperature and coding an (audible or visual) alert when the temperature rises above or falls below a specified range.	• Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo). • Explaining material choices and why they were chosen as part of a product concept. • Programming an N,E, S, W cardinal compass.
Evaluate	• Stating an event or fact from the last 100 years of plastic history. • Explaining how plastic is affecting planet Earth and suggesting ways to make more sustainable choices. • Explaining key functions in my program (audible alert, visuals). • Explaining how my product would be useful for an animal carer including programmed features.	• Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Developing an awareness of sustainable design. • Identifying key industries that utilise 3D CAD modelling and explaining why. • Describing how the product concept fits the client's request and how it will benefit the customers. • Explaining the key functions in my program, including any additions. • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool. • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch. • Demonstrating a functional program as part of a product concept pitch.
Technical	• To know that a 'device' means equipment created for a certain purpose or job and that monitoring devices observe and record. • To know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose. • To understand that conditional statements (and, or, if booleans) in programming are a set of rules which are followed if certain conditions are met.	• To know that accelerometers can detect movement. • To understand that sensors can be useful in products as they mean the product can function without human input.
Additional	• To understand key developments in thermometer history. • To know events or facts that took place over the last 100 years in the history of plastic, and how this is changing our outlook on the future. • To know the 6Rs of sustainability. • To understand what a virtual model is and the pros and cons of traditional vs CAD modelling.	• To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request. • To know that 'multifunctional' means an object or product has more than one function. • To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.

	Cooking and Nutrition		
	Reception	Year 1	Year 2
Unit	Soup	Smoothies	Balanced Diet
Design	• Designing a soup recipe as a class. • Designing soup packaging.	• Designing smoothie carton packaging by-hand.	• Designing three wrap ideas based on a food combination which work well together.
Make	• Chopping plasticine safely. • Chopping vegetables with support.	• Chopping fruit and vegetables safely to make a smoothie. • Juicing fruits safely to make a smoothie.	• Chopping foods safely to make a wrap. • Constructing a wrap that meets a design brief. • Grating foods to make a wrap. • Snipping smaller foods instead of cutting.
Evaluate	• Tasting the soup and giving opinions. • Describing some of the following when tasting food: look, feel, smell and taste. • Choosing their favourite packaging design and explaining why.	• Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Comparing their own smoothie with someone else's.	• Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. • Evaluating food by giving a score.
Other Knowledge	• To know that soup is ingredients (usually vegetables and liquid) blended together. • To know that vegetables are grown. • To recognise and name some common vegetables. • To know that different vegetables taste different. • To know that eating vegetables is good for us. • To discuss why different packages might be used for different foods.	• To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground. • To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	• To know that 'diet' means the food and drink that a person or animal usually eats. • To understand what makes a balanced diet. • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group. • To know that 'ingredients' means the items in a mixture or recipe.

	Year 3	Year 4
Unit	Eating Seasonally	Adapting a recipe
Design	• Designing a recipe for a savoury tart.	• Designing a biscuit within a given budget, drawing upon previous taste testing judgements. • Designing packaging for a biscuit that targets a specific group.
Make	• Following the instructions within a recipe. • Tasting seasonal ingredients. • Selecting seasonal ingredients. • Peeling ingredients safely. • Cutting safely with a vegetable knife.	• Following a baking recipe, including the preparation of ingredients. • Cooking safely, following basic hygiene rules. • Adapting a recipe to meet the requirements of a target audience. • Using a cuboid net to create packaging.
Evaluate	• Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart.	• Evaluating a recipe, considering: taste, smell, texture and appearance. • Describing the impact of the budget on the selection of ingredients. • Evaluating and comparing a range of food products. • Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).
Other Knowledge	• To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons. • To know that cooking instructions are known as a 'recipe'. • To know that imported food is food which has been brought into the country. • To know that exported food is food which has been sent to another country.. • To know that eating seasonal foods can have a positive impact on the environment. • To know that similar coloured fruits and vegetables often have similar nutritional benefits. • To know that the appearance of food is as important as taste.	• To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that safety and hygiene are important when cooking. • To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping. • To understand the importance of budgeting while planning ingredients for biscuits. • To know that products often have a target audience.

	Year 5	Year 6
Unit	Developing a recipe	Come dine with me
Design	• Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Researching existing recipes to inform ingredient choices.	• Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken.
Make	• Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe.	• Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence.
Evaluate	• Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.	• Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Taste testing and scoring final products. • Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. • Evaluating health and safety in production to minimise cross contamination.
Other Knowledge	• To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. • To know that coloured chopping boards can prevent cross-contamination. • To know that nutritional information is found on food packaging. • To know that food packaging serves many purposes.	• To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).

Cooking Curriculum – Further Enrichment

At OLSH, we believe that learning about food, how to prepare it and the principles of a healthy diet is important for every child. Statistically, almost 20% of children are obese by the time they leave primary school, and families on lower incomes tend to be the most disadvantaged in terms of their culinary knowledge and skills.

Our curriculum aims to teach children how to cook simple, healthy dishes, along with key life skills in the preparation and handling of different foods and kitchen equipment. Our idea is that children cook once per half term, building a bank of recipes that they can then share at home. By the time our children leave Year 6, they will have prepared and cooked nearly 50 dishes, with each child receiving a copy of each recipe to keep at home.

We believe that our curriculum for cooking needs to go beyond that which is set out in the National Curriculum - providing important life skills that will set our children up for many years to come. By the time our children have left Our Lady and St Hubert's, not only will all children have learnt and regularly practiced all the skills they need to follow any recipe, but they will have a love of cooking, setting them up for their lives beyond education.

See below or our progression of skills and recipes across the school and for more information visit our website here:
Cooking at Our Lady and St Hubert's

What is taught and when/Progression of skills

	Autumn Term		Spring Term		Summer Term	
	Half term 1	Half term 2	Half term 1	Half term 2	Half term 1	Half term 2
Reception	Toast	Fruit salad/fruit kebab	Pancakes	Berry mess	Pasta Salad	Fruit smoothie
Year 1	Dips and dunkers	Festive Muffins	Pancakes	Pasta bake	Toasted pitta pockets	Apricot whip
Year 2	Pitta pizzas	Blueberry muffins	Chunky pasta soup	Carrot cookies	Couscous Salad	Ice lollies
Year 3	Tomato pasta sauce	Chocolate and courgette cakes	Carrot and coriander soup	Tinned fruit crumble	Pizza	Fruit flap jack
Year 4	Bread	Cranberry and cinnamon tray back	Cheese and potato pie	Fruit fool	Quesadillas	Summer pudding
Year 5	Apple and parsnip soup	Christmas cake	Sausage and bean hot pot	Scones	Chickpea and mushroom curry	Fruit crumble

Cooking skills

Cooking Skill	Reception	Y1	Y2	Y3	Y4	Y5	Y6
Cut							
Blend							
Stir							
Pour							
Rolling							
Mixing							
Spreading							
Weigh							
Chop							
Break an egg							
Grate							
Grill							
Bake							
Sieve							
Peel							
Boil							
Mash							
Follow a recipe							
Open a tin							
Rub							
Fry							
Fold							
Whisk							
Knead							

The 6Cs and Design and Technology

How our 6Cs will be evident through our computing curriculum		
Character	**Citizenship**	**Communication**
The children's character skills will be showcased in DT, where they will regularly be challenged to design and make a product- learning from each attempt, failure or set back. Children will learn to embrace these 'failures' as opportunities to learn and improve.	Through various projects, children will be faced with problems that affect themselves, and/or others around the world. They will use design briefs along with the 'design, make, evaluate' process, to plan ways to solve or support these issues.	Through DT lessons, children will have various opportunities to present and explain their work to a range of audiences. They will also be given opportunities to tailor their products to a design brief- for a specific age range or audience
Collaboration	**Creativity**	**Critical thinking**
Through the design, make, evaluate process there are lots of opportunities for children to work collaboratively. Assessing each person's strengths in a team, making group decisions and working together to achieve one outcome.	Children will be given lots of opportunities to identify problems, and then have chance to design and make products that solve them, incorporating various DT skills and elements. This will develop their 'entrepreneurial eye' and encourage them to take action.	DT lessons will involve children thinking critically throughout the process, about a variety of decisions that they will need to make. This could be regarding choices of materials, use of images to fit a design brief in the best way, decisions regarding packaging or cost etc… Children will be taught how to make these decisions in an informed way, using other curriculum knowledge to help them.