



ST MARY'S, WELHAM GREEN

Design and Technology

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At St Mary's, we have chosen the Kapow! scheme of work. 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. Our Design and technology scheme of work enables pupils to meet the end of key stage attainment targets in the National curriculum and the aims also align with those in the National curriculum. EYFS (Reception) units provide opportunities for pupils to work towards the Development matters statements and the Early Learning Goals.

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

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

The National curriculum organises the Design and technology attainment targets under four subheadings: Design, Make, Evaluate, and Technical knowledge, as such we use these four subheadings to teach Design and technology in line with the Kapow! Scheme.

Through our Design and Technology curriculum at St Mary's, our pupils are expected to have developed their understanding and enjoyment of Design and Technology subject knowledge, skills and processes specified by the National Curriculum. They should be equipped with a range of skills to enable them to succeed in their secondary education and be innovative and resourceful members of society. Formative and summative assessment is taken to determine children's understanding and inform future planning. Children are also encouraged to evaluate their work and final products against their initial design ideas. Collective work scrutiny, led by subject leaders, takes place where teachers are able to openly discuss work produced across the school. Individual assessment is then shared with parents on a termly basis, via school reports.

Expected Impact:

- 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 Non-Negotiables

We teach Design and Technology in the second half of each term. One hour a week is dedicated to the subject.

Purposeful Planning

- Lessons must follow the progression outlined in the School's D&T curriculum map
- Clear objectives and design criteria must be shared with pupils at the start of the unit
- Each unit should follow the design, make, evaluate cycle and include practical tasks

Skills and Vocabulary

- Key D&T vocabulary must be explicitly taught and used regularly
- Skills should be modelled and practiced before independent work begins

Safety First

- Health and Safety procedures must be modelled and enforced when using tools and materials.
- Age-appropriate tools must be used, and equipment should be checked before each lesson.
- Pupils must be always supervised

Inclusive and Accessible Learning

- Lessons must be adapted to meet the needs of all learners.

Evaluation

- Pupils must be given time to evaluate their product against the design criteria

At the end of the unit -

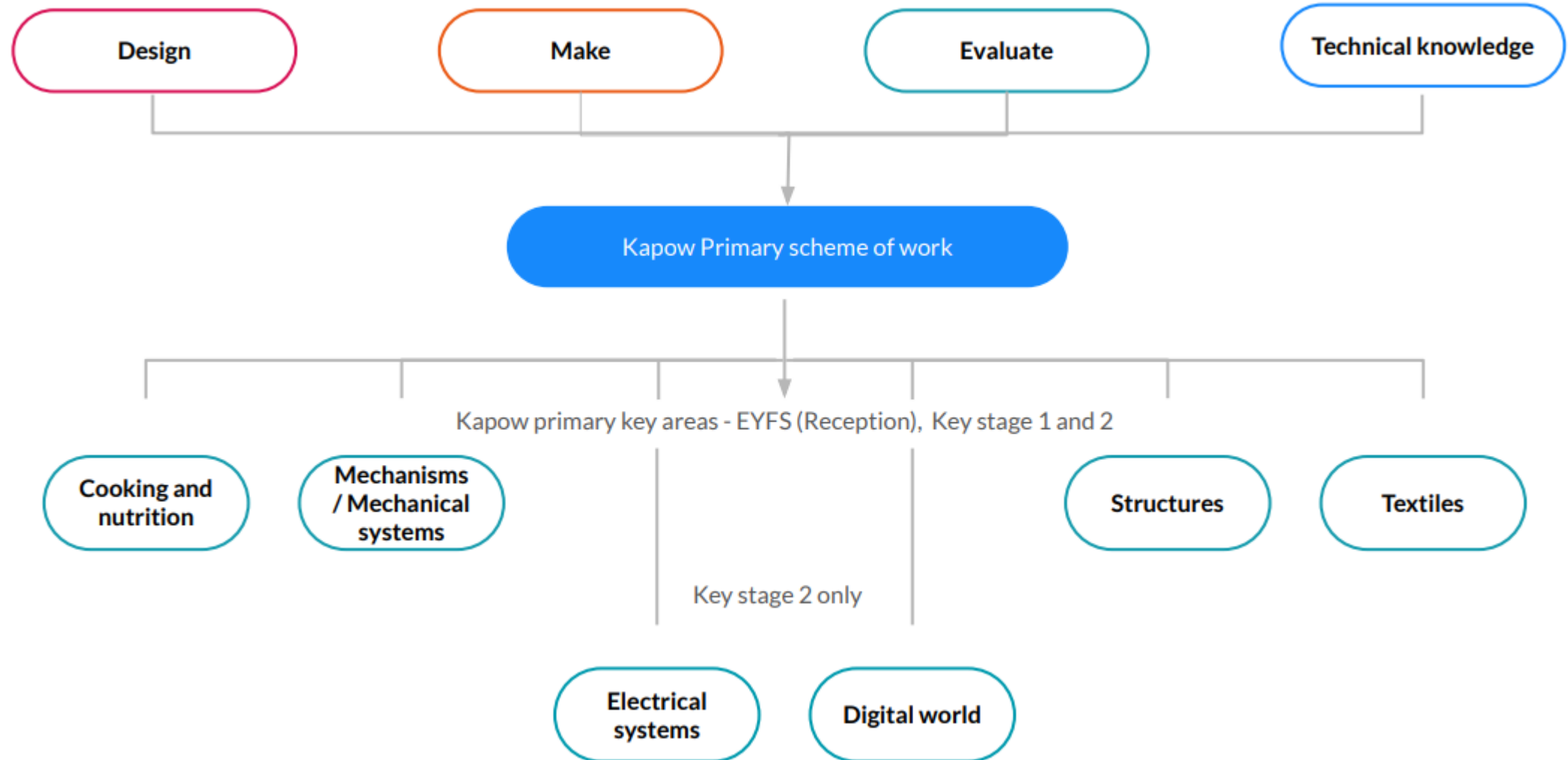
- At the end of each unit, teachers must use the Kapow! Summative assessments.

Curriculum Overview

	Autumn	Spring	Summer
R	Structures: Junk Modelling	Textiles: Bookmarks	Structures: Boats
1	Structures: Windmills	Textiles: Puppets	Cooking and Nutrition: Smoothies
2	Structures: Baby Bear's Chair	Mechanisms: Fairground Wheel	Mechanisms: Making a Moving Monster
3	Digital World: Wearable Technology	Cooking and Nutrition: Eating Seasonally	Textiles: Egyptian Collars
4	Structures: Pavilions	Mechanical Systems: Making a Slingshot car	Electrical Systems: Torches
5	Electrical Systems: Doodlers	Mechanical Systems: making a pop-up book	Cooking and Nutrition: Developing a recipe
6	Structures: Bird Boxes	Textiles: Waistcoats	Digital World: Navigating the World

Curriculum Overview

To align with the national curriculum, we will be using the four key strands which run throughout the Kapow! schemes of work.



Curriculum Overview

The National Curriculum outlines the three main stages of the design process: design, make and evaluate. Using the Kapow Primary units the children will follow these stages, to form a full project.



Supporting the EYFS Framework

At St Mary's we carefully model how to use Design and Technology to enrich children's pursuits and provide the right scaffolding to help them achieve deeper understanding.

At St Mary's, we ensure that planning, designing, making, and developing key skills and knowledge are integral to our Design and Technology provision. As children take part in Design and Technology specific continuous provision. They experience many opportunities to explore these areas in depth, working with a variety of materials, processes and outcomes.

When pupils independently access these spaces beyond structured lesson times, the role of the adult is to sensitively support and extend their learning—listening to their ideas, asking thoughtful questions, and offering guidance. Instead of creating artificial learning moments during child-led play, we at St Mary's wait for genuine sparks of interest to emerge. From there, we enrich the experience by providing extra resources, demonstrating new techniques, or even exploring digital tools together.

Design and
Technology



EYFS Overview

Expressive Arts and Design									
	Subject	Year one progression link	Autumn one	Autumn two	Spring one	Spring two	Summer one	Summer two	ELG
Creating with materials	DT	<p>Build structures such as pencil pots and chairs, exploring how they can be made stronger, stiffer and more stable. Recognise areas of weakness through trial and error.</p> <p>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.</p> <p>Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique.</p> <p>Learn about the basic rules of a healthy and varied diet to create dishes. Understand where food comes from, for example plants and animals.</p>	<p>Make I can use different tools for design and technology.</p> <p>I can manipulate playdough and create a ball and sausage shape.</p>	<p>Design I can make verbal plans and material choices.</p> <p>Make I can join materials in variety of ways.</p> <p>Evaluate I can describe my favourite and least favourite of my model.</p> <p>Technical I can make simple suggestions to fix my junk model.</p>	<p>Make I can make props and costumes for role play scenarios.</p>	<p>Design I can make verbal plans and material choices.</p> <p>Make I can follow a simple recipe to make an Easter nest.</p> <p>Evaluate I can taste the food I have made and give an opinion.</p>	<p>Make I can use different tools for design and technology.</p>	<p>Design I can make a junk model boat.</p> <p>I can make a boat that floats and is waterproof.</p> <p>Evaluate I can make predictions about which boat will float the best.</p> <p>Technical I know that waterproof materials do not absorb water.</p>	<p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <p>Share their creations, explaining the process they have used.</p> <p>Make use of props and materials when role playing characters in narratives and stories.</p>
Being imaginative and expressive	I can express myself through different tools and media which are available daily in continuous provision.								<p>Invent, adapt and recount narratives and stories with peers and their teacher.</p> <p>Sing a range of well-known nursery rhymes and songs.</p> <p>Perform songs, rhymes, poems and stories with others, and (when appropriate) try to move in time with music.</p>
Key Vocab	Create, make design, glue, join, stick, cut, tear, materials, tools, waterproof, float, sink, mix, break, pour, stir, taste, squeeze, squash, roll and pat								

Progression of Skills

Progression of skills and knowledge

Structures

EYFS (Reception)

Junk modelling

Progression of skills and knowledge

Mechanisms / mechanical systems

Skills	Design	<ul style="list-style-type: none"> Making verbal plans and material choices. Developing a junk model. 	<ul style="list-style-type: none"> Designing a junk model. Using knowledge of materials.
	Make	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Making a boat that floats.
	Evaluate	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Making prediction waterproof. Making prediction. Testing their design. Investigating the materials used.
Knowledge	Technical	<ul style="list-style-type: none"> To know there are a range of 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. 	<ul style="list-style-type: none"> To know that 'waterproof' is a property of some materials.
	Additional		<ul style="list-style-type: none"> To know that some materials are stronger than others. To know the difference between different materials.

Year 5

New Gears and pulleys

Skills	Design	<ul style="list-style-type: none"> Noticing wider-reaching problems or needs in the community. Identifying a wide range of needs and potential barriers through market research. Writing more complex problem statements that consider multiple factors and constraints. Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost. 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. Using a series of prototypes to refine and improve their designs.
	Make	<ul style="list-style-type: none"> Consistently apply safety instructions. Select appropriate scissors to handle delicate cutting tasks and challenging materials. Cutting patterns and drawings accurately. 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. Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects.
	Evaluate	<ul style="list-style-type: none"> Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects. Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Considering alternative materials, tools or techniques that could enhance the product. 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.
Knowledge	Technical	<ul style="list-style-type: none"> That mechanical systems that use gears in everyday objects (eg bicycle, clock). That gears and pulleys allow us to transfer movement and force from one part of a mechanical system to another. That gears allow us to increase the output of a mechanism.
	Additional	<ul style="list-style-type: none"> That market research is a way of collecting information about problems or needs. That constraints are things that might stop our ideas being successful. That original and innovative ideas are different from what has been made before. That annotations are detailed labels and comments on diagrams. That risks are things that might happen. That hot glue creates a strong bond quickly. That it is often better to choose safer equipment. That sustainability means thinking about the materials that were used to make a product and how the product was made. That their final product can still be improved by different materials or techniques. That evaluating their designs in detail will help them understand its successful and less successful parts. That feedback should be positive, helpful and specific. That explaining how they used feedback to improve their design can help them create better products in the future.

A progression of skills document is used from Kapow! These give an indication of how each unit meets the National Curriculum objectives while allowing each year group to see prior knowledge and understanding and their expected next steps.

Barriers To and Solutions for Engagement, Progress and Achievement

	Hearing Impairment	Visual Impairment	Dyspraxia (fine/ gross motor)	Memory/ processing	ASC	ADHD	Cognition	SEMH
Barriers identified by SENCo/Class teacher	<ul style="list-style-type: none"> • Difficulty hearing instructions in noisy environments • Missing verbal safety instructions • Difficulty following group discussions 	<ul style="list-style-type: none"> • Difficulty seeing detailed drawings, plans, or small parts • Struggles reading instructions • Poor contrast on worksheets 	<ul style="list-style-type: none"> • Difficulty using scissors, rulers, or fine tools • Struggles with cutting, joining, assembling • Low confidence due to messiness 	<ul style="list-style-type: none"> • Difficulty with planning and sequencing steps 	<ul style="list-style-type: none"> • Frustration with mistakes or perceived failure • Difficulty waiting for support or help • Sensory overload from noise, tools, or group work 	<ul style="list-style-type: none"> • Frustration with mistakes or perceived failure 	<ul style="list-style-type: none"> • Recall of prior learning • Recall of instructions • Understanding rules 	<ul style="list-style-type: none"> • Difficulty in taking turns & sharing time • Difficulty with not succeeding first time • Difficulty with boundaries
Solutions Identified by subject co-ordinator	<ul style="list-style-type: none"> • Provide written instructions and key vocab <ul style="list-style-type: none"> • Use clear visual demonstrations • Ensure good classroom acoustics • Position pupil to lip-read if needed • Use visual signals for group tasks 	<ul style="list-style-type: none"> • Use large-print plans and instructions • Provide tactile resources and 3D models • Use high-contrast materials and backgrounds <ul style="list-style-type: none"> • Verbal explanations alongside visuals • Use buddy support 	<ul style="list-style-type: none"> • Provide adapted tools (easy-grip scissors, larger handles) <ul style="list-style-type: none"> • Use templates and jigs • Allow extra time for practical tasks • Provide hand-over-hand support if appropriate • Celebrate effort, not just final product 	<ul style="list-style-type: none"> • use of pictorial representation and reduction in verbal instruction • film, photograph of routines to aid recall 	<ul style="list-style-type: none"> • clear structure of lesson with minimal periods of inactivity • absolute clarity of instruction • safe space and safe people identified for learning 	<ul style="list-style-type: none"> • Pre-teaching of rules and expectations • Careful partnerships 	<ul style="list-style-type: none"> • Pre-teaching • Pictorial representations 	<ul style="list-style-type: none"> • Careful groupings • Specific rules • Work on resilience

- Use the **STEP** approach: adapt **Space, Task, Equipment, People**
- Use multi-sensory teaching: model, demonstrate, repeat
- Keep instructions clear and simple – reduce unnecessary talk
- Allow for *trial and error* – praise creativity over perfection
- Prepare tools and resources in advance to avoid waiting time
- Store tools safely and accessibly for all pupils
- Celebrate a diverse range of designers and inventors – showcase inclusive role models



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