



# Progression Documents

## Design & Technology



### Curriculum Overview:

Learning for life



We are **CONFIDENT COMMUNICATORS** who listen and share our ideas confidently.

We are **RESILIENT RESEARCHERS** who don't give up and learn from our mistakes.

We are **ASPIRATIONAL AMBASSADORS** who strive to be the best we can be.

We are **COLLABORATIVE CITIZENS** who work together and respect others.

Intent	Implementation	Impact
<p>As a school we provide Design &amp; Technology for all registered pupils, including those in reception classes.</p> <p><b>Early years Foundation Stage:</b> In EYFS the framework is organised across 7 areas of learning rather than subject areas. As part of this document we have planned how the skills taught across EYFS feed into our Design &amp; Technology curriculum and which statements from the 2020 Development Matters are prerequisite skills.</p> <p><b>KS1 and KS2:</b> Taking the National Curriculum as its starting point, our curriculum is carefully sequenced so that powerful knowledge builds term by term and year by year. We make meaningful connections within subjects and between subjects.</p> <p>At Spalding St Pauls Primary School, we use the Design &amp; Technology Chris Quigly Curriculum Companions and the Design &amp; Technology Association as a base to form our teaching as it is designed to take account of statutory requirements and curriculum research. The core content – the 'what' – of the curriculum is stable, but as a school we will bring it to life in our own local context, and teachers will adapt lessons – the 'how' – to meet the needs of our own classes, school and community.</p> <p>Our curriculum - which includes the taught subject timetable as well as spiritual, moral, social and cultural development, our co-curricular provision and the ethos and 'hidden curriculum' of the school – is intended to spark curiosity and to nourish both the head and the heart.</p> <p><b>Our Curriculum for Design &amp; Technology provides all children, regardless of their background, with:</b></p> <ul style="list-style-type: none"> <li>Entitlement: Regardless of their starting point, the curriculum allows pupils to produce creative work, to explore ideas and develop the confidence to excel in a broad range of techniques.</li> <li>Coherence: Taking the National Curriculum as its starting point, the curriculum is sequenced from Early Years to Key Stage 2 and beyond so that pupils gradually develop and build their creativity and imagination. Pupils will design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world.</li> <li>Mastery: All pupils will be explicitly taught about the formal elements – Inspirational designs, Planning, making, testing, modifying and improving in small steps. Pupils will revisit, develop and apply their skills with increasing technical proficiency</li> <li>Adaptability: Our Design &amp; Technology curriculum is designed to give teachers flexibility, allowing them to select and adapt resources for their specific context.</li> </ul> <p>Education with Character: We aim to build and maintain pupils' confidence in their ability as designers to create. The curriculum will develop aspects of character such as resilience, confidence and risk taking. Through the curriculum, pupils are given opportunities to share, reflect and learn about each other's experiences whilst recognising the things we have in common.</p>	<p><b>KS1 and KS2:</b> The Early years Foundation Stage (EYFS) follows the 'Development Matters' in the EYFS guidance. In EYFS design &amp; technology is taught as part of 'Physical Development' and Expressive Arts and Design' and will be seen as part of the continuous and adult lead provision across the classroom, not as a discrete subject.</p> <p>In KS1 and KS2, Design &amp; Technology is taught as a discreet subject every week, every other term, to allow time to embed skills in the subject.</p> <p>The Teaching Sequence <b>Within each Subject</b> Our Curriculum has been very carefully sequenced to ensure coverage and appropriate progression through substantive and disciplinary knowledge.</p> <p><b>Within the Unit</b></p> <ol style="list-style-type: none"> <li><b>KNOWLEDGE ORGANISER:</b> A knowledge organizer is provided to show coverage of each unit of work, outlining key fact to be covered over the unit of work and key vocabulary. Each unit clearly sets out the knowledge that should be taught and reviewed in the sequence of lessons. Each unit is planned to cover six lessons</li> <li><b>PRE-UNIT ASSESSMENT:</b> Each unit of work begins with a pre-learning quiz.</li> </ol> <p><b>Within the Lesson</b></p> <ol style="list-style-type: none"> <li><b>SUBJECT OVERVIEW:</b> At the start of a lesson children are reminded about the subject being taught and what this covers (Design &amp; Technology: Is the study of designing and making products that teaches us to solve problems, and then evaluating how successful the results are. As a designer we will know ...)</li> <li><b>FLASHBACK:</b> Each lesson begins with a flashback to recap prior knowledge of the unit, previous units or previous years learning.</li> <li><b>VOCABULARY:</b> Subject specific key vocabulary is then taught which will be covered in the lesson. See word aware books for more information.</li> <li><b>MAIN TEACHING:</b> ('I do', 'We do', and 'You do'). During the main teaching, content broken down into small steps of 'I do', 'We do', and 'You do' to allow for modelling, guided practice and independent practice.</li> <li><b>RECAP:</b> At the end of the lesson children will have an opportunity to recap on the knowledge they have been taught throughout the session.</li> </ol> <p><b>End of the Unit</b></p> <ol style="list-style-type: none"> <li><b>ASSESSMENT:</b> At the end of a unit of work children will carry out a post-learning quiz to see how much knowledge they have maintained and so teachers can pick up any misconceptions and fill gaps where needed. This assessment will inform end of unit summative assessments.</li> </ol>	<p>Assessing impact is assessing how well pupils have learned the required knowledge from the implemented curriculum.</p> <p>It is not about lots of tests, or meticulously comparing pupils' outcomes at the start and end of each unit.</p> <p><b>If pupils can keep up with a well-sequenced curriculum that has progression built in, they are making progress!</b></p> <p>The Curriculum has this progression built in, and teachers and subject leads monitor how well pupils are keeping up with it.</p> <p>This can be done through: <b>Formative assessment in lessons</b> There are opportunities for formative assessment in the lesson slides, and teachers continually adapt their lesson delivery to address misconceptions and ensure that pupils are keeping up with the content.</p> <p><b>Low-stakes summative assessment</b> A post-learning quiz is provided for every unit. These questions usually take the form of multiple-choice questions, and aim to assess whether pupils have learned the core knowledge for that unit. These should also be used formatively, and teachers will plan to fill gaps and address misconceptions before moving on.</p> <p><b>Use of sketchbooks and pupil-conferencing</b> Unless it is unavoidable, pupils will use the same sketchbook over multiple years, until it is complete. Sketchbooks will contain a record of pupils' progress over a significant period of time. Talking to pupils about their sketchbooks allows us to assess how much of the curriculum content is secure. These conversations are used effectively to determine whether pupils have a good understanding of the vertical concepts (<b>practical knowledge</b>), and if they can link recently taught content to learning from previous units. (They should not be used to assess whether pupils can recall information, as low-stakes quizzes can gather this information more efficiently).</p>

## Breadth of Study

### Breadth of Study EYFS:

Three and Four-Year-Olds	Personal, Social and Emotional Development		<ul style="list-style-type: none"> <li>Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.</li> </ul>
	Physical Development		<ul style="list-style-type: none"> <li>Use large-muscle movements to wave flags and streamers, paint and make marks.</li> <li>Choose the right resources to carry out their own plan.</li> <li>Use one-handed tools and equipment, for example, making snips in paper with scissors.</li> </ul>
	Understanding the World		<ul style="list-style-type: none"> <li>Explore how things work.</li> </ul>
	Expressive Arts and Design		<ul style="list-style-type: none"> <li>Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park.</li> <li>Explore different materials freely, in order to develop their ideas about how to use them and what to make.</li> <li>Develop their own ideas and then decide which materials to use to express them.</li> <li>Create closed shapes with continuous lines, and begin to use these shapes to represent objects.</li> </ul>
Reception	Physical Development		<ul style="list-style-type: none"> <li>Progress towards a more fluent style of moving, with developing control and grace.</li> <li>Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</li> <li>Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.</li> </ul>
	Expressive Arts and Design		<ul style="list-style-type: none"> <li>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</li> <li>Return to and build on their previous learning, refining ideas and developing their ability to represent them.</li> <li>Create collaboratively, sharing ideas, resources and skills.</li> </ul>
ELG	Physical Development	Fine Motor Skills	<ul style="list-style-type: none"> <li>Use a range of small tools, including scissors, paintbrushes and cutlery.</li> </ul>
	Expressive Arts and Design	Creating with Materials	<ul style="list-style-type: none"> <li>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> <li>Share their creations, explaining the process they have used.</li> </ul>

### Breadth of study Key Stage 1:

When designing and making, pupils should be taught to:

#### Design

- 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

#### Make

- Select from and use a range of tools and equipment to perform practical tasks such as 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

#### Evaluate

- Explore and evaluate a range of existing products
- Evaluate their ideas and products against design criteria

#### Technical knowledge

- 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.

#### Cooking and nutrition

- Use the basic principles of a healthy and varied diet to prepare dishes.
- Understand where food comes from.

## Breadth of study Key Stage 2:

When designing and making, pupils should be taught to:

### **Design**

- 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

### **Make**

- 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

### **Evaluate**

- 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

### **Technical knowledge**

- 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.

### **Cooking and nutrition**

- 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.

## Vertical Concepts

The subject of Design & Technology categorises substantive knowledge to be taught as practical or theoretical knowledge; we have therefore used the same terminology here.

However, in the context of our Curriculum, the practical knowledge could be considered as the 'Vertical Concepts'.

As they progress through the curriculum, pupils build their understanding of practical concepts: they revisit and add layers to their understanding throughout the curriculum.

No matter what project have been chosen to illustrate the theoretical, disciplinary or practical knowledge, the core understanding of practical knowledge – the vertical concepts – should remain the same.



### Technical Knowledge

The things pupils need to know in order to produce a product.

These have each been sequenced so that pupils are explicitly taught aspects in small steps, allowing pupils to gradually build their understanding and mastery of technical knowledge.



### Practical knowledge:

The things pupils need to know in order to produce a product.

These have each been sequenced so that pupils are explicitly taught aspects in small steps, allowing pupils to gradually build their understanding and mastery of practical knowledge.

### Control of Materials

Joining

Measuring

Cutting

## Disciplinary Knowledge

### Master practical techniques

### Design, make, evaluate and improve

### Take inspiration from design

Technical Knowledge / Practical Knowledge

Design Processes

Design Inspiration



Structures

Mechanisms

Textiles

1. A product overview: Inspirations, Designs, Timelines (think)

2. Finger Fluency

3. Plan: A mood board to give more detail about your inspiration (think)

4. Plan: market research on your product (think)

5. Plan: A design sheet (think)

Food and Nutrition

Electrics & computing

6. Make: Prototypes (make)

7. Tested your product (break)

8. Modify your design (think)

9. Improved design (make)

This concept involves developing the skills needed to make high quality products

This concept involves developing the process of design thinking and seeing design as a process.

This concept involves appreciating the design process that has influenced the products we use in everyday life.

Vertical Concepts							
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials	Cutting	Cut materials safely using tools provided.  Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).		Cut materials accurately and safely by selecting appropriate tools.  Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).		Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or using a more precise scissor cut after roughly cutting out a shape).  Show an understanding of the qualities of materials in order to choose appropriate tools to cut and shape (e.g. the nature of fabric may require sharper scissors than would be used to cut paper).	
	Measuring	Measure and mark out to the nearest centimetre.		Measure and mark out to the nearest millimetre.		<i>Measure and mark out accurately</i>	
	Joining	Demonstrate a range of joining techniques (such as gluing, using hinges or combining materials to strengthen).		Select appropriate joining techniques.		<i>Select appropriate joining techniques.</i>	

Disciplinary Knowledge							
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Master practical Techniques	Structures	Practise drilling, screwing, gluing and nailing materials to make and strengthen products.		Choose suitable techniques to construct products or to repair items.  Strengthen materials using suitable techniques.		Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).	
	Mechanisms	Create products using levers, wheels and winding mechanisms.		Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as linked levers or pneumatics).		Convert rotary motion to linear using cams.  Use innovative combinations of electronics (or computing) and mechanics in product designs.	
	Textiles	Understand how simple 3-D textile products are made, using a template to create two identical shapes.  Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.  Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.		Know how to strengthen, stiffen and reinforce existing fabrics.  Understand how to securely join two pieces of fabric together.  Understand the need for patterns and seam allowances.		A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.  Fabrics can be strengthened, stiffened and reinforced where appropriate.	
	Food and Nutrition	Cut, peel and grate ingredients safely and hygienically.  Measure or weigh using measuring cups or electronic scales.  Assemble and cook ingredients.		Prepare ingredients hygienically using appropriate utensils.  Measure ingredients accurately to the nearest gram.  Follow a recipe.  Assemble and cook ingredients (controlling the temperature of the hob, if cooking).		Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).  Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.  Demonstrate a range of baking and cooking techniques.  Create and refine recipes, including ingredients, methods, cooking times and temperatures.	
	Electrics & computing			Create products with series and parallel circuits.  Control and monitor models using apps designed for this purpose.		Create products using electronics kits that employ a number of components (such as LEDs and resistors).  Write code to control and monitor models or products.	

<b>Design, make, evaluate and improve</b>	<p>Design products that have a clear purpose and an intended user.</p> <p>Make products, refining the design as work progresses.</p> <p>Use software to design</p>	<p>Design with purpose by identifying opportunities to design.</p> <p>Make products by working efficiently (such as by carefully selecting materials).</p> <p>Refine work and techniques as work progresses, continually evaluating the product design.</p> <p>Use software to design and represent product designs.</p>	<p>.Design with the user in mind, motivated by the service a product will offer (rather than simply for profit)</p> <p>Make products through stages of prototypes, making continual refinements.</p> <p>Ensure products have a high-quality finish, using art skills where appropriate.</p> <p>Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.</p>
<b>Take inspiration from design</b>	<p>Explore objects and designs to identify likes and dislikes of the designs.</p> <p>Suggest improvements to existing designs.</p> <p>Explore how products have been created.</p>	<p>Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.</p> <p>Improve upon existing designs, giving reasons for choices.</p> <p>Disassemble and reassemble products to understand how they work.</p>	<p>Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.</p> <p>Create innovative designs that improve upon existing products.</p> <p>Evaluate the design of products so as to suggest improvements to the user experience.</p>

## DT OVERVIEW

	Autumn		Spring		Summer	
<b>Year 1</b>		Mechanisms Slides and leavers		Cooking		Structures <i>Freestanding Structures</i>
<b>Year 2</b>		Mechanisms Wheels and Axles		Cooking		Textiles
<b>Year 3</b>		Mechanical Systems Leavers & linkages		Cooking		Structures <i>Shell structures</i>
<b>Year 4</b>		Mechanical Systems Pneumatics		Electrical Systems Simple circuits and switches		Textiles
<b>Year 5</b>		Mechanical Systems Cams		Cooking		Structures <i>Frame Structures</i>
<b>Year 6</b>		Mechanical Systems Pulleys and gears		Electrical Systems More complex circuits		Textiles

Structures	Mechanisms	Cooking	Electrical Systems	Textiles
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